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# AMERICAN BEE JOURNAL

CALIF.

FEBRUARY, 1917



Members in Attendance at the Ontario Beekeepers' Meeting Held in Toronto in December











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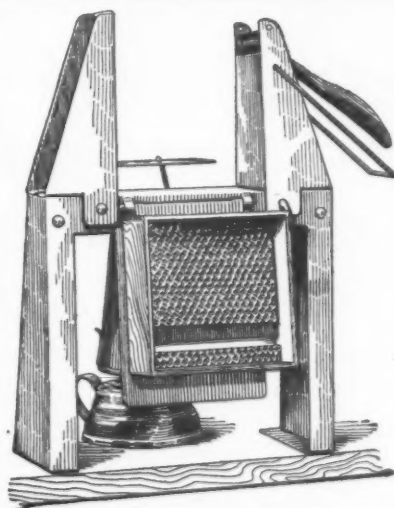
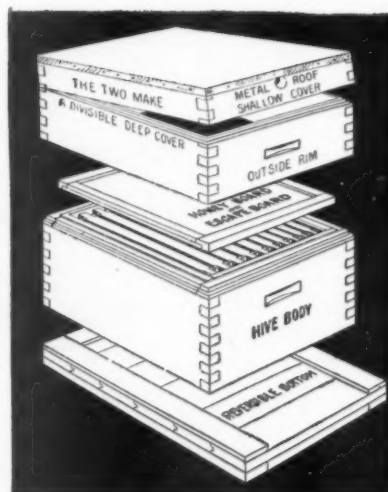
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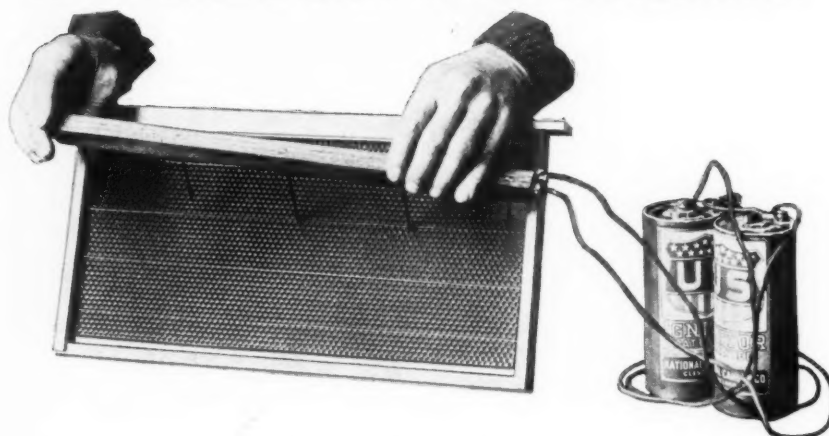
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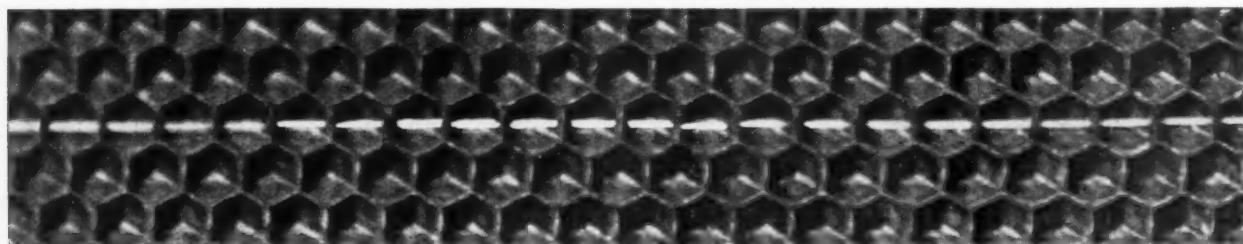
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3	holding 12 sections, 4½x1½, showing 3	1 30	11 00	13 Same as No. 3.....	.22	.25	\$2 30	21 00	20 00
1½	holding 24 sections, 4½x1½, showing 4	1 90	17 00	11½ Same as No. 1½.....	.1½	.15	1 40	12 50	12 00
6	holding 24 sections, 3½x5x1½, showing 4	1 80	16 00	16 Same as No. 6.....	.3½	.25	2 20	20 00	19 00
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Vol. LVII.—No. 2

HAMILTON, ILL., FEBRUARY, 1917,

MONTHLY, \$1.00 A YEAR

## COMMERCIAL QUEEN REARING

Methods of Wholesale Production of Queens at the Davis Apiaries  
as Seen by Our Staff Correspondent

**B**EEKEEPING is getting more highly specialized every year. Where formerly the beekeeper produced both comb and extracted honey for market and also reared his own queens and a few to sell, the beekeeper now is either a comb or extracted honey producer or a queen-breeder. The larger the business the less the inclination to cover too much ground.

Since the demand for queens is growing so rapidly, we have a double purpose in mind in presenting this article to our readers. First, we wish to supply the information as to how good queens can be reared on a large scale and second we feel that our readers would like to know something of the methods of the men with whom they deal. Accordingly we have decided to describe the queen rearing apiaries of some of the better known breeders from time to time as opportunity offers.

Since J. M. Davis, of Spring Hill, Tenn., is probably the oldest queen-breeder in the United States, having been in the business for 44 years continuously, it seems fitting that his work should be the first to be described in this series. While Ben. G. Davis, his son, conducts his business entirely apart from that of the father, the two can best be considered in a single article.

As a young man J. M. Davis was employed as a telegraph operator for the L. & N. railroad. The business of the road was not heavy at the little town where he was stationed, and, having much time on his hands he became interested in bees. Like many another who has taken up beekeeping for the fun of it, he soon found in it the possibilities of a serious business. Because of the uncertainty of the honeyflow in his locality, he decided to follow queen rearing to insure a reasonably cer-

tain income. Although in the beginning he cared for his small business in connection with his job, he shortly found it to his advantage to devote his entire attention to his bees. The name Davis has appeared so frequently in the bee journals for so many years that few names among the beekeeping fraternity would sound

more familiar to our readers.

### THE DAVIS LOCATION.

Middle Tennessee is generally considered as one of the finest agricultural sections of America. It is a most beautiful country and the mild climate makes it a desirable section for a home. Spring Hill is located

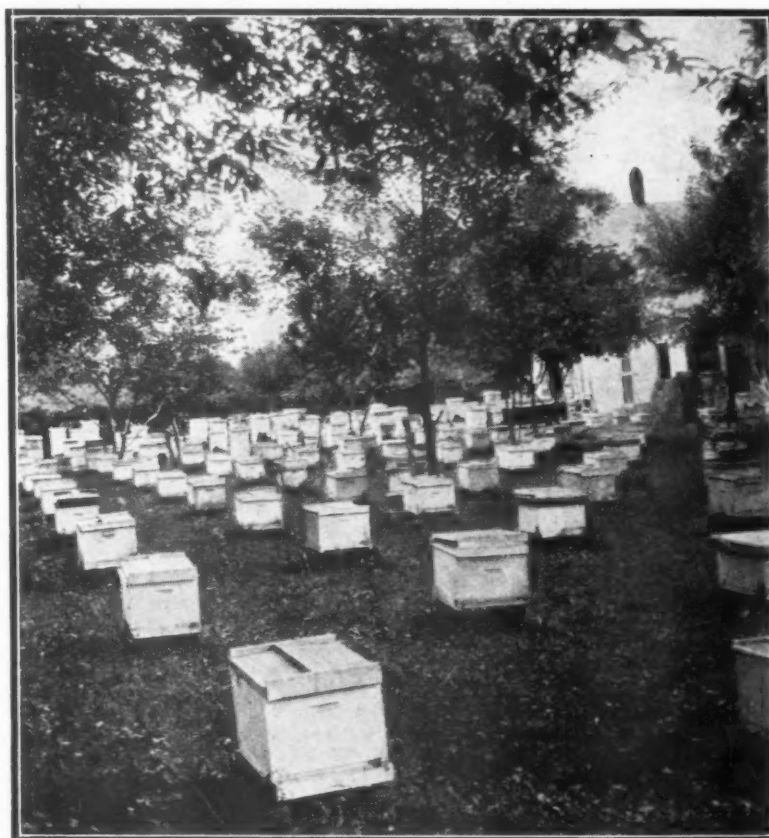


FIG. 1.—A CORNER OF THE J. M. DAVIS QUEEN-BREEDING APIARY

about thirty miles south of Nashville. The Spring Hill postoffice and village is located about a mile from the railroad. Strangely enough the railroad has given the station the name "Ewells" instead of calling it by the same name as the post-office. This leads to some confusion. The Davis homestead is located between the town and the station so that while living in the country they have all the conveniences of the town right at the door. The father, J. M. Davis rears three banded Italians exclusively, while the son, Ben G. Davis confines his entire attention to the goldens. Ben is unmarried and makes his home with his parents, but his apiary is several miles distant to avoid mixing of the strains of bees.

Our first illustration shows a corner of the J. M. Davis yard. At the time of my visit there were about fifteen hundred nuclei in the two yards. The systems followed by father and son differ in several things. J. M. Davis uses four compartment nuclei for mating purposes as shown in the second illustration, while Ben uses only two divisions for a full colony as shown at Fig. 3. The four compartment hives have an opening at each side and one at each end to avoid mixing of the bees or danger of the queens entering the wrong compartment on returning from their mating flight. These compartments are lettered, A, B, C, and D and when manipulating them, it is the habit to begin always at A and follow through the regular system to avoid mistakes. Figure 4, shows a part of the Ben Davis yard. Double the number of hives are necessary to mate the same number of queens by his system that his father requires,

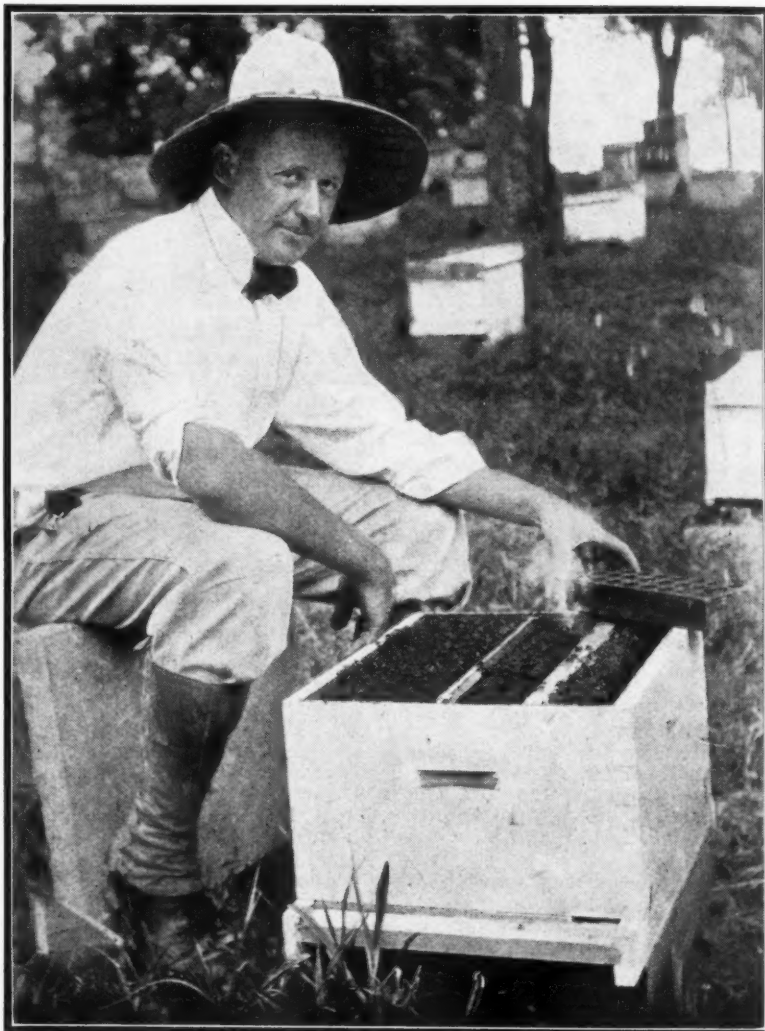


FIG. 3.—BEN. G. DAVIS AND HIS MATING NUCLEI

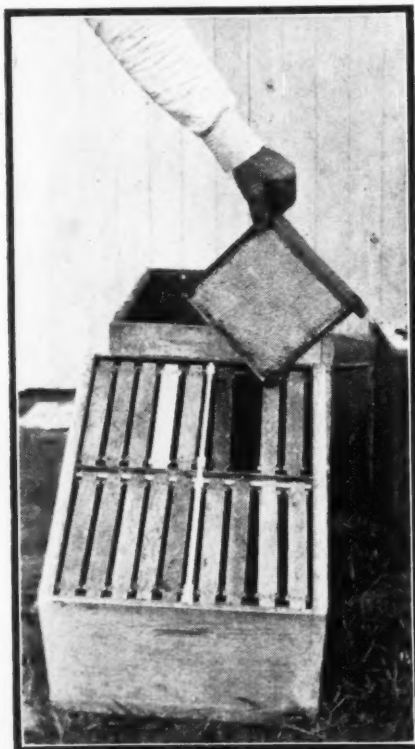


FIG. 2.—THE FOUR COMPARTMENT MATING HIVES USED BY J. M. DAVIS

since each hive has only two compartments instead of four. Just in front of this yard is a small stream which furnishes an abundance of water at all times. This is an important matter when so many bees are kept in one place. On page 341 of our October number was shown the watering device in use at the home yard.

#### GOLDENS OR THREE BANDED ?

Until recently I have been prejudiced against golden bees. Now I am not sure about it. It depends more upon the strain of bees than upon the color. The few golden queens that I have had in my yards have not been particularly good, while some of the three banded queens have made a remarkable showing. Goldens are often said to be bad robbers and thus more likely to bring home foulbrood, bad tempered and not particularly hardy. As far as I could see there was no difference in the bees in the two yards in any respect aside from color. The goldens are more beautiful and are very popular on that account. At the time of my visit there was little honey coming in from the field, yet there was no tendency to rob in either apiary.

We went into the yard and examined

a number of colonies without using smoke, yet the bees showed no inclinations to resent our presence. Ben remarked that he never used a queen as a breeder where it was necessary to use smoke in handling the colony and the goldens in this yard seemed fully as gentle as any three-banded Italians that I have seen. As far as honey gathering is concerned, I learned from J. M. Buchanan that his best colony had gathered 250 pounds of surplus while the next best produced a hundred pounds less. The big production was from a colony headed by a golden. While I am not quite ready to abandon the three-banded Italians for goldens I have lost most of my prejudice against them and from now on will look more to the strain of bees than to whether they be goldens or three-banded bees.

#### GETTING BIG BATCHES OF CELLS.

It takes a lot of bees to rear queens by the Davis methods. In the first place from two to four times as many bees are necessary to fill their nuclei as would be needed to fill the same number of baby nuclei. At the close of the season all that is necessary is to remove all the queens but one from each hive, remove the division boards and winter them as



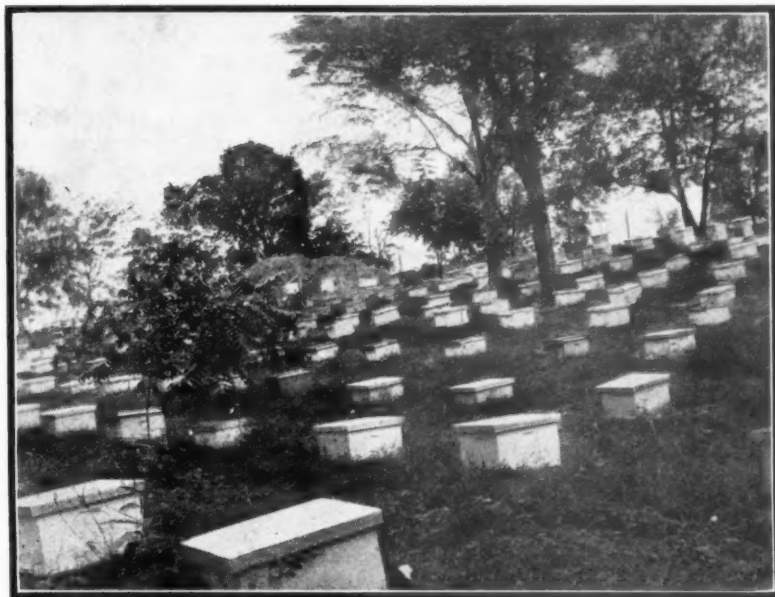


FIG. 4.—BEN G. DAVIS' QUEEN-REARING YARD

full colonies. The nuclei in the yard where the goldens are reared seemed plenty strong to winter as they were. Every effort is made to rear queens under natural conditions.

Colonies to be used for cell building are first built up until they are

to center all their attention on the building of queen cells. Fig 7 shows 37 nicely finished cells in one lot.

I was somewhat surprised to find both father and son following the Alley plan, modified of course until it really is the Davis plan. They long ago tried the Doolittle cell cup method and abandoned it as unsatisfactory with their system. They use drone comb as a foundation for the cells. The combs are cut down until the cells are very shallow as practiced by Alley and the larvae grafted into them as is usual with the other methods. For grafting they use the youngest larvae, never over twelve hours old.

Their cell block for holding the ripe cells which are ready for the nuclei is something not often seen in queen yards. It is shown at figure 8. The block has two dozen cavities which hold the cells right side up. On the eleventh day the cells are taken from the finishing colony and cut apart with a sharp knife. Cells built by the Alley plan are often built so close together that some care is necessary to cut them apart without injuring the young queens. As the cells are taken from the frame they are placed right side up in the cell block. This block is carried from hive to hive and is always convenient. The cells are fastened to the side of the center combs in the nuclei where the young queens are to be mated.

Queen breeding is one of the most exacting branches of the business of beekeeping. It is necessary to plan eleven days ahead all the time and to avoid having queen cells ready to transfer on Sundays or holidays when one wishes to be away from the yard. Stormy days will often make it difficult to transfer cells that are ready or to graft new ones. To graft cells, transfer them to nuclei, and cage and mail eight to ten thousand queens in a season is a mighty busy job if the work is properly done. The breeder who does not use great care

in every bit of the work will not usually last long in the queen rearing game. The public is exacting in its demands and it is only a high class product that will continue to bring the repeated orders year after year that make a queen business profitable. While the increasing interest in the business of beekeeping and the increasing number of beekeepers who buy rather than rear their queens insures the permanence of the queen breeding business, the man who is not regular in his habits, careful as to details and painstaking in all his work will do better to stick to honey production than to take up queen breeding. On the other hand the specialist who can meet the conditions finds queen rearing a fascinating and profitable line of work.

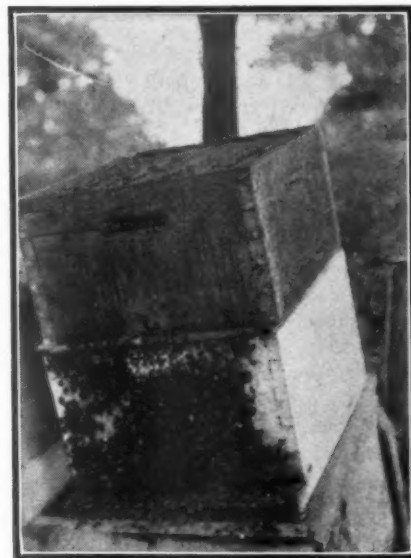


FIG. 6.—THE CELLS ARE FINISHED ABOVE AN EXCLUDER WITH QUEEN BELOW



FIG. 5.—ALL CELLS ARE BUILT AND FINISHED IN VERY STRONG COLONIES

very strong. The queen and all the brood is then taken away. The nurse bees having no brood to care for will accept big batches of cells and few of them will fail. As soon as the cells are well started they are taken from the cell starting colonies and given to a strong double story colony where they are finished above an excluder. As soon as the first lot is taken from the cell building colony another lot is given them. If the same colony is used for cell building for any length of time it is given frames of sealed brood to supply it with a large force of newly emerged workers to act as nurses. Cell building colonies are not allowed unsealed brood at any time, as the design is

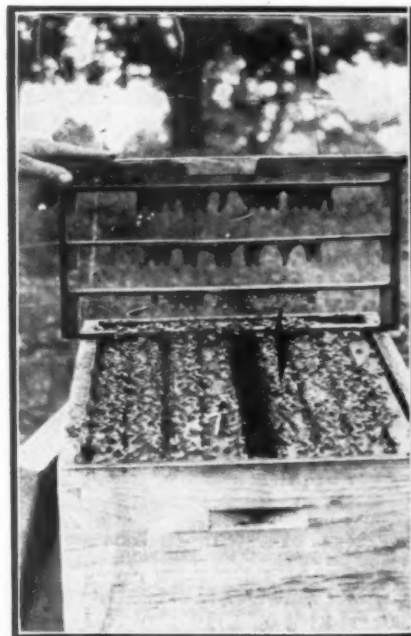


FIG. 7.—A BATCH OF 37 FINISHED CELLS



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C. P. Dadant, Editor.

Dr. C. C. Miller, Associate Editor.

Frank C. Pellett, Staff Correspondent.

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## THE EDITOR'S VIEWPOINT

## Those Comb Honey Rates

In our January issue we called the attention of our readers to the fact that the Western Classification Committee had made a change in their rates so as to give a lower rate on comb honey when properly protected.

Carload shipments go at fourth class rates.

Local shipments unprotected are subject to a rate which is double the first-class rate.

Properly protected shipments of comb honey will take the first-class rate, and proper protection means that your shipments must be crated, must be protected by at least four inches of straw or excelsior in the bottom of the crate, and all crates must be marked, FRAGILE—THIS SIDE UP.

We call the particular attention of our readers to these rates so that they may govern their shipments to take the lowest rate possible.

## Bees and How to Keep Them

We are in receipt from the Department of Agriculture at Ottawa, Canada, of a 56-page bulletin on the above subject. It is by the well-known Dominion Apiarist, Mr. F. W. L. Sladen. It is impossible to put in so narrow limits more information than has been supplied within those pages by the author. Besides, the 40 cuts which the bulletin contains are most excellent pictures, many of them half-tones, which help the descriptions by the illustrations they furnish. The Bulletin is No. 26 (2d series), and should be in the hands of every beekeeper in Canada.

## The National

The beekeepers need a strong national organization. The present association has survived numerous storms that have threatened to wreck it, and it is to be hoped that under the leadership of Prof. Jager it will profit by the

mistakes of the past and gain a new lease of life.

In connection with this, the strength of the American Poultry Association is worthy of study. The last report shows a membership of 7000 and a cash balance in the treasury of more than \$10,000. In addition there is a stock of books worth \$8000 beside several thousand dollars worth of other property. A paid secretary is employed at a salary of \$2000 per year, and he is furnished with an office assistant and stenographer.

An association of this kind can hope to be strong only by confining its

It is to be hoped that by eliminating from our association the factors which have caused the past disasters, success will come. There has been some sentiment in favor of disbanding the old organization and starting entirely new. However, it seems to be generally agreed that the work of the association will be conducted along entirely new lines.

F. C. P.

## Crop Reports

Our active and efficient beekeeping representative at the Bureau of Entomology of Washington, D. C., Dr. E. F. Phillips is very anxious to see the beekeepers appreciate the usefulness of accurate crop reports. In our December number, we spoke of the Ontario people and their committee on crops and prices. They have a good system, but even there the beekeepers do not all sufficiently appreciate the benefits to be derived from an efficient crop report. If all our beekeepers volunteered to fill out the crop reports sent to them in blank, instead of neglecting them as so many do, they could secure information gathered in statistics that would enable them to set a correct value upon their honey crop. This is coming some day, for our sons will appreciate this better than we do, but we should hasten the day. Make a resolve always to fill out and mail the crop report blanks

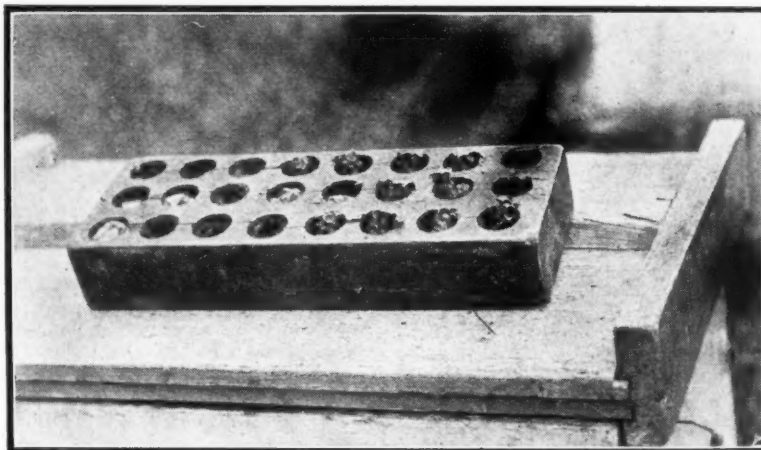


FIG. 8.—BLOCK FOR HOLDING QUEEN-CELLS (See preceding page)

activities to such things as all members find of mutual interest. The poultry association has confined its attention to educational work exclusively, and while there have been numerous differences of opinion and at times some feeling manifested, there has been no serious danger to the organization as a result. Eastern and western producers are both seeking the same markets, and every activity that tends to increase public interest in the product tends to the betterment of the markets and is to the equal interest of all.

which are sent to you. If you do not receive blanks, write to Dr. E. F. Phillips, at the Bureau of Entomology, Washington, and ask for them. They will be gladly forwarded, and statistics will be returned to you when the time comes.

## Bees in Moving Pictures

Quite a little has been done already to show work in the apiary in moving pictures. But we now learn of a project in this line, by Geo. A. Coleman, of the University of California, to show



a cenario on a large scale of the natural history, anatomy and embryology of the honeybee; manipulation, comb and extracted honey production, queen rearing, diseases and enemies, manufacture of supplies, beekeeping in different countries, etc. In short, Mr. Coleman would propose to supply colleges, schools and beekeepers' conventions with all sorts of moving pictures of the bee work.

This is an immense undertaking, but we wish success to the project. Sooner or later things of this kind will be in vogue in all lines of business.

#### Apiary at Michigan State Prison

Mr. O. H. L. Wernicke has our thanks for a copy of the Michigan State Prison Report, containing a pretty picture of their house-apiary, West Prison farm. This is probably a unique experiment. The teaching of beekeeping at the Michigan State Prison farm has already been mentioned in our September number, page 311.

#### Nosema Apis in Australia

The Journal of Agriculture of Victoria, Australia, contains in its October, 1916 number, page 629, a very interesting article on *Nosema apis*. It appears that this parasite is found in many healthy bees.

"Bees from 88 widely-separated apiaries were examined and the presence of the *Nosema* parasite proved in all but two, one of which was the departmental apiary at the Burnley School of Horticulture. In several instances the bees which showed *Nosema* infection came from apiaries in which no mortality or dwindling ever occurred, and it appeared, therefore, doubtful whether the presence of the parasite in the bees be in itself necessarily fatal, or whether it greatly interferes with the productivity of the hives excepting under certain conditions due to climatic influences."

Something similar has already been noticed elsewhere. Although the presence of *Nosema* may have influence in helping to cause disease, it is quite probable that only under unfavorable conditions does the parasite have an ill influence on the health of the bees. This need not astonish any one, since we are told that the germs of tuberculosis have no effect upon healthy individuals.

#### Those Local Markets Again

In our January issue we urged beekeepers to keep their local markets supplied even if it was necessary to purchase honey from outside to do it.

If other extracted honey is not purchasable, there is still one loophole left so as to keep your customers supplied. Induce as many of them as you

can to take a little comb honey. Comb honey is easily obtained. In fact, the market on it is dull. You can help relieve this by using a few cases locally, and at the same time you can prevent the substitution of something else for honey by your customers.

#### Granulation of Honey—Preventing it By Solarization

At the Toronto meeting in December last, Mr. J. F. Dunn, president of the Lincoln and Welland Beekeepers' Association, spoke of the success which he has in keeping honey from granulating by exposing it to sun heat. He would like to know whether there is any chemical change in honey thus exposed and what the change is. We believe that there must be some evaporation of moisture, and that alone might be sufficient to prevent granulation. However, it is an open question. If honey can be prevented from granulating by sun heat without too much loss of time and in large bulk, there may be some advantage in making use of the method for the benefit of customers who do not like granulated honey. There is probably no loss of flavor in such a method, as the heat would not be great enough to cause the evaporation of the volatile essential oils which give the flowers their fragrance and the honey its exquisite flavor.

We would like to have Mr. Dunn tell us his method, for publication. It should be tried and the exact amount of evaporation ascertained. Reports on this subject from different sources, next summer, will be interesting.

Mr. Dunn suggests to us that samples of solarized honey be forwarded to Mr. Alin Caillas, the Paris Agricultural Chemist, for analysis. But Mr. Caillas is at the front, in the trenches, and very little of this kind of work can be expected of him before peace comes. We must have in this country some capable analysts who can make the test.

#### Attend the National

Make your plans if possible so that you will be able to enjoy the three day session of the National Association in Madison, Wis., Feb. 6, 7 and 8. It will be worth your while.

#### Isle of Wight Disease in Liguria

Regarding the bee-disease in Liguria, mentioned on page 372 of November, 1916, we have received a letter from Engineer Capponi. He says:

"The disease of our bees was the Isle of Wight disease, for I have ascertained it through an English apiarist who lives in the infected district and who visited my apiary. He states that the disease has stopped in his district

and we hope it will be the same here. "The maximum of infection was during July, August and September. At present, Nov 5, it seems to have stopped. If it starts again, I shall send you some sample bees. But do you not think we should seek for the germs of the disease in the honey? If so, it would be well to heat it.

"In case of further trouble, I will have some of the honey analyzed and will let you know the result. But I hope the disease will not occur again."

Engineer Capponi, whom we mentioned in our "Notes from Abroad," in May, 1915, lives at San Remo, on the Riviera, where they raise roses and carnations, by hundreds of acres, during the winter, for shipment to the capitals of northern Europe, in peace times. During our visit of 1913, Mr. Capponi offered Mrs. Dadant a beautiful bouquet of carnations, almost an armful. As we reminded him of this in our last letter, he adds:

"If the signora Dadant were here at present, I could offer her much prettier flowers than then, especially General McArthur roses, American roses which grow in my garden and are magnificent."

#### Value of Beekeepers' Meetings

The value of an exchange of ideas at beekeepers' meetings is probably underestimated by a majority of beekeepers. The quotations following are from the "System" Magazine, clippings from which were kindly forwarded to us by a reader:

"I was told just the other day that a certain automobile manufacturer is arranging to send an efficiency engineer to the plants of his competitors—some of them manufacturers of the same priced car—to gather up ideas that might be profitably applied in his own plant. The engineer is to go, not as an 'industrial spy,' but with a letter of introduction of the manager, requesting the courtesy and offering to reciprocate."

"If there are a hundred concerns in business and each one keeps its original ideas to itself, each has the original ideas of one. If general exchange is the rule each has the original ideas of one hundred."

So with our business of producing and marketing honey. One of us may have an excellent idea, but how much better will it become if we add the original ideas of a dozen or hundred other beekeepers.

#### Bees Wintering About Normally

Indications so far are that bees are wintering well. Those left out-of-doors, in the central West at least, have had good flights at intervals in January. In the northern half of the country the snow has helped to protect the clover. Unfortunately, in this immediate vicinity the ground is very dry—not conducive to the best wintering of clover.



# SEVENTY YEARS OF BEEKEEPING

The Second of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

**A**FTER the discovery of parthenogenesis, mentioned in our previous paper, the most important discovery for beekeeping was the invention of a practical movable-frame hive. The control of the colonies, to help them in all their needs, to treat them in case of disease and to promote or prevent increase, is based entirely upon the ability of the apiarist to examine every part of the hive. In 1851, Mr. L. L. Langstroth invented the first practical movable-frame hive, this invention consisting principally in frames hanging by shoulders in rabbets at each end of the hive, and separated from the hive walls by a bee-space of from  $\frac{1}{4}$  to  $\frac{3}{8}$  inch. This bee-space, which prevents the bees from gluing the frames to the body, bottom or top, was the key which solved the problem of comb handling, since it obviated the faults of the former inventions.

At nearly the same time Mr. Langstroth invented this, Berlepsch, in Germany, invented a similar hive, the difference between the two being the movable ceiling. The Berlepsch hive opens from the rear, the ceiling is nailed fast, the hive resembling a cupboard. The Langstroth invention enables the apiarist to lift up any comb from the hive without disturbing the others. Only a few years later, in France, L'Abbé Sagot invented a hive almost identical with the Langstroth, which became quite popular in his vicinity before the Langstroth invention was known on the European Continent.

These inventions were far from having smooth sailing, for the French bee magazine, *L'Apiculteur*, established in 1856 by Hamet, and still now published, ridiculed the movable-frame hive, saying that the only advantage of these hives was the facility of their being taken apart "like a puppet-show." His criticisms were later to be overcome by an irresistible popular current in favor of the new system.

In October, 1851, Mr. Langstroth wrote: "The use of these frames will, I am persuaded, give a new impetus to the easy and profitable management of bees." This was true, and one of the first results was the importation into America of the Italian bees. Langstroth has earned and secured the title of "Father of American Beekeeping."

As early as 1842, Capt. Balenstein, a Swiss, had brought over, from Italy to his castle in the Rhetian Alps, a colony of Italian bees. His praise of them, in the *Bienenzeitung*, in 1848, caused Dzierzon to try them, and soon queens were being reared by him to supplant the common race. Not only on account of their greater strength and prolificness, but because of the experiments which their introduction permitted did this race cause a progress in beekeeping. For instance, the age at which the young bees take their first flight and the length of the worker's active life were easily ascertained by

the introduction of bees of a different color.

The first Italian bees brought to America were imported in 1859, by Samuel Wagner and Richard Colvin. In 1860, Parsons, of Long Island, received a number, and later many queens were imported by Adam Grimm, Chas. Dadant and others. The Italians have often been noticed working on the red clover when the common bees did not do so. Evidently in some cases their tongues are longer than those of the common bee.

The Carniolan bees were also early mentioned as better bees than the common race, by the Baron of Roschutz, though they never have been so highly recommended, owing to the greater difficulty of tracing hybridization because of the lack of plainly distinctive signs like the yellow bands of the Italians. Although the Carniolans are slightly larger and less dark than the common black bee, hybrids are difficult to distinguish.

In 1853, L. L. Langstroth published the first edition of his book, "The Hive and Honey Bee." This book, written without attempts at supplying a textbook, became the *vade mecum* of practical apiarists. Editions followed each other in rapid succession in 1857 and 1859. Shortly afterwards, Moses Quinby published his "Mysteries of Beekeeping Explained," in which he recommended a hive similar to that of Langstroth, with the same hanging frame, but of different dimensions, taller and deeper than the Langstroth standard.

In 1861, the American Bee Journal was established at Philadelphia, by Samuel Wagner. The first year of that magazine is still considered as exceedingly valuable by those who are fortunate enough to possess a copy. Articles by Dzierzon, Rev. Geo. Kleine, Berlepsch, Donhoff, our own Langstroth and other Americans who have also passed away, such as W. W. Cary and H. Nesbit, contain valuable information. The only writer still living who wrote for the Bee Journal at that date is our old friend M. M. Baldrige.

A method of securing the pure fertilization of young queens in localities where black bees were in entire control, was to retain Italian drones in queenless colonies late in the season when nearly all drones were put to death in healthy colonies. Early in the forenoon both the colonies containing the Italian drones and those having queens ready to mate were fed with warm and diluted honey, and thus incited to fly simultaneously at times when other drones would still remain in the hives. At the present day pure fertilization of queens is much better controlled by the removal of drone-comb from undesirable hives and its replacing with worker combs, while in the desirable colonies drone-comb is placed in the center of the brood-nest. It does not invariably insure choice

matings but is a great step in that direction.

Golden Italians were already produced by in-and-in breeding, selecting the brightest, as reported by E. A. Brackett, "a distinguished Boston sculptor," on page 92 of the American Bee Journal for April, 1861.

Unfortunately, the Civil War, then raging, compelled Samuel Wagner to suspend the publication of the American Bee Journal until 1866, when it was again resumed by him, at Washington, D. C. The original price of \$1.00 was advanced to \$2.00, owing to the "greatly increased cost of paper" due to the war. History repeats itself.

In this second volume we find the name of another notable beekeeper who is still living, Dr. G. Bohrer, then of Indiana, now of Kansas. In this volume also, May, 1867, we find the first mention of comb foundation. J. L. Hubbard, of Walpole, N. H., called upon Mr. Henry Steele, of Jersey City, who presented him with a box of it, "to experiment with." But this was evidently very defective, for Mr. Hubbard suggested that sheets be made of cotton cloth or some other substance dipped into wax and impressed with the cells of the bee. It was later tried, as was tin-foil and other substances and found impractical.

A. I. Root also began in this volume his "Experience of a Novice in Beekeeping," witty and practical articles which were so well liked that he started a magazine of his own, in 1873, *Gleanings in Bee Culture*, perhaps the widest read magazine on our industry at the present day.

In the same year, November, 1867, Charles Dadant, began also to write for the American Bee Journal.

Adam Grimm's first large importation of Italians, from the apiaries of Prof. Mona, of Bellinzona, near Lake Maggiore, was also made in that year. He brought with him some 40 queens.

In 1868, Charles Dadant imported also largely from the Blumhoff apiaries of Biasca, near Bellinzona. But the transportation of bees across the ocean was for a long time subject to great losses, for the modern methods of packing them were unknown and shippers usually gave them too much food, in some instances literally drowning them in honey.

My next article will deal with the invention of the honey extractor.

## The Winter Cluster

BY C. E. FOWLER.

**I** THINK Mr. Spuehler and the Editor have both missed it on page 410, December issue, when they say that the bees in the center of the cluster are more active (thus increasing the heat, as the outside is colder) because they are in vitiated air. I have experimented on clusters with thermometers placed over (and under

glass covers with very warm cushions over the glass and metal covered telescope covers over the cushions.

I have one in the backyard now, a very small nucleus about as large as your two fists. The thermometer outdoors is 32 degrees; over the empty part of the hive (no frames) 44, and directly over the cluster 51. The thermometers are on top of the glass, and the cluster which is  $\frac{1}{4}$  inch below the glass and shows about  $2\frac{1}{2}$  inches in diameter, is the thickness of one bee over the frames. I can see the bees through the glass. I can see them move and see how far apart they are. I can see down into the cluster, and there is no possible chance for vitiated air to stay inside the cluster.

To return to the hive that I just looked at: There is enough warm air rising from the cluster to heat the glass 7 degrees more directly over the cluster than 8 inches away, which would give much more circulation than in summer and more than needed. Now just imagine a house with open doors all around it inhabited by soldiers in cold weather and the soldiers trying to close the doors by standing in them. Can you imagine them closing the openings so tightly that the house would have vitiated air in it, and the inside soldiers starting the electric fans?

In an ordinary sized room in winter a hole in the window a foot square would give more than enough fresh air. I think it would be impossible for the bees to shut off more than 75 percent of the openings. I can very easily explain why the cluster is warmer inside than it is outside. First, let us examine the cluster through the glass. If the cushion over the glass is warm enough, the shape of the cluster is similar to the letter U or a hemisphere, the warm glass forming the top of the cluster. By taking the cushion off you can see the middle of the cluster and measure the diameter of it with a rule. The colder the outside air the smaller and warmer the cluster; the warmer the outside air the larger the cluster until the outside air is 57 degrees, when *presto! change!* there is no cluster, the bees are spread all through the hive and summer has come to the bees. This will happen any warm day anytime in the winter (provided of course there is no brood). A few hours warmth will do it.

Now suppose the hive gets below 57 degrees, a cluster is immediately formed, then the outside bees get cold and crawl inside to get warm, and if the inside of the cluster is not warm enough they begin to rub their hands together, and as it gets colder the cluster gets smaller and the outside bees get cold quicker, and when they go inside they say, "What is the matter with you fellows, why don't you put more honey in the stores," and they fill up with honey and get warm. With a few glass covers look at the bees any time without breaking the seal and learn many things that you could not otherwise.

Hammonton, N. J.

[Yes, friend Fowler, I can imagine men huddled together so closely that those inside will have to breathe the air already vitiated by their comrades. But we want all the arguments and all the opinions we can get. So let us have more.—EDITOR.]

## Shipping Bees in Packages Without Combs

BY M. C. BERRY.

**W**HEN only 10 years of age I became interested in bees, and ever since my interest has been increasing. However, twice I was persuaded to desert the little fellows, once to attend college in Ohio, and again to engage in the mercantile business in Missouri and Colorado. But the call of my boyhood's buzzing friends was too strong, and soon I was back with them again. Now, after years of hard although pleasant work to one who loves bees, our colonies number over the thousand mark.

In the year 1904 we shipped our first bees in packages. During this year we filled quite a number of orders for bees by the pound. However, our conveniences for making cages for bees were so very crude and the mode of feeding bees while in transit so poor that after one year we discontinued shipments for the time being.

Now we have a shop as well as warehouses where during the winter months we make and store cages, to be used in the shipment of bees by the pound, besides many little mailing blocks used in sending queens through the mails. All material used in manufacturing these cages is carefully selected basswood lumber, the lightest and we believe the best for this purpose. All cages are made as light as is possible and still preserve strength for the hard handling they often get while in the hands of the express people.

At the present time we are unable to ship bees in large packages by parcel post. There may come a time when this will be possible and practical, but I believe the express method better and more advisable now, even if the post-office authorities were willing to take the larger packages. One trouble with the parcel post is lack of room and a tendency to cover up and smother the bees in mail sacks. In order that they shall go through in good condi-

tion, bees in packages must not be crowded for ventilation.

When spring comes and the shipping season draws near, we hasten to build up our colonies into an overflowing condition. This we do in order to be able to get all of the bees for our package trade from above the queen-excluders. By this method we are able to give our customers nearly all worker bees and very few if any drones. We also save a great deal of time looking for the queen before shaking the bees through the funnel into our cages. During the season just past we were able, by practicing the above methods, to take over 500 pounds of bees from one apiary of less than 100 colonies, besides making a surplus of 75 pounds of honey per colony.

One of the first and I believe most important requisites in package shipping is to have a large well ventilated cage. Next the bees must be amply supplied with food. The candy used is made of pure pulverized sugar and honey just of the right proportions to remain moist and still not run and daub the bees while *en route*. This candy is placed in the cage so that it can always be had from above. Thus the bees are able to cluster naturally and still have their food so convenient that it is unnecessary for them to break their cluster. Water is given to bees in transit only during extreme warm weather or when shipments are intended for parties living in the arid West. In such cases a small can filled with water is placed alongside the candy at the top of the cage. Bees receive the water through a small perforation which allows only a drop at a time to pass through. Excepting as above I believe water unnecessary in combless and broodless packages.

During the last few years the shipping of bees in packages has become a large industry. Safe and satisfactory delivery is made to nearly all parts of the United States and the greatest part of Canada. Beekeepers in the North and West report that bees by the pound from the South can be made to pay very handsomely on the invest-



M. C. BERRY'S DIXIE QUEEN YARD, DOWN AMONG THE PINES



ment. A one pound swarm of bees complete with a good queen very often makes a surplus of 50 to 100 pounds of comb honey during the first season. However, in order to have the best results it is necessary to get bees early in the season, say the first to the last of April, depending of course on locations. Also it is advisable, if possible, to have drawn combs partly filled with honey on which to hive the bees when they arrive. If no honey is coming in, it is also best to feed a small amount of sugar syrup (about half and half). Continue feeding until you are sure some honey is coming in, as this stimulates brood rearing.

Buying bees by the pound without queens is being practiced by many northern and western beekeepers. Many times by adding from one-half to one pound of bees to the cluster of a weak colony, especially when taking it out of winter quarters in the early spring, one is able to save a valuable queen and build up a colony which becomes strong in time to procure a nice crop of honey. Otherwise this same colony, perhaps, if it lived at all, would only get in shape after the main surplus honey flow; too late to accomplish anything this season.

When receiving a shipment of bees from the South, we always advise the beekeeper to gorge the bees before releasing them. Sugar syrup made as above is about right for this purpose. Sprinkle this syrup on them from all sides, shake them about in the cage, and when all of the bees seem to be full as well as wet, they are ready to be shaken into the hive or else dumped in front of their new home and allowed to run in much the same as natural swarms. If one is strengthening weak colonies by adding bees, it is a good idea not only to wet and gorge the bees you are running in but also sprinkle syrup on and smoke those already in the hive. By practicing these methods one should have little if any loss from bees flying and none from fighting.

Now if one is buying bees for increase and has no combs on which to

hive the swarms, we advise full sheets of foundation and also daily feeding for the stimulation of comb building as well as brood-rearing. Give each colony say from one pint to one quart of syrup daily until honey is coming in. A small pan with excelsior in it makes an excellent feeder. Put a shallow empty super on the hive, setting pan containing the syrup just over the cluster of bees. Unless the weather is very cool the bees will soon remove the syrup from the pan to the combs below.

The one pound swarms, if purchased quite early in the season will, if treated as above, build up into nice strong colonies the first year, and very often not only gather enough honey to winter but also some surplus. However, as a rule you should not expect much surplus honey when a colony has to build out combs from foundation unless there is a late fall flow. If you demand honey the first year, regardless, I would advise you to buy the larger swarms, the two and three pound sizes. Our Canadian friends advocate the larger swarms for all purposes, as the seasons there are short. Some of them even prefer the five-pound swarms, and say they are the best investments for their locality. The five-pound swarms are fine, but we have always thought them expensive.

It has been said that in time a great many northern and some western beekeepers would find it advisable to kill their bees in the fall and replace by procuring bees in packages from the South the following spring. This I do not believe advisable, nor will it be practiced to any great extent. To be sure the saving of honey perhaps would offset the cost of the bees from the South, but there would not be enough profit to make it practical. Also, would it be quite fair to the little fellows after they had toiled so hard for you? In case of winter losses, or desire for early increase and for strengthening weak colonies, bees in packages are without a doubt a success.

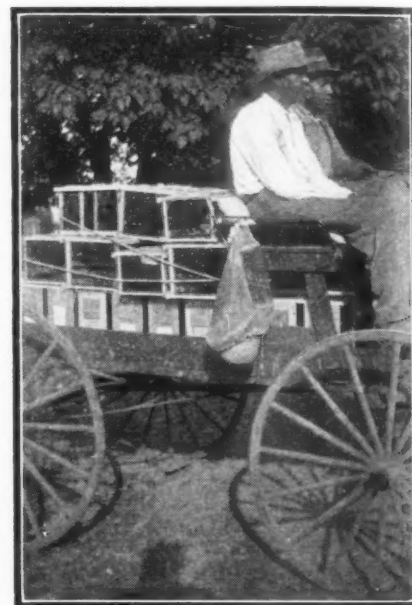
Hayneville, Ala.

## Swiss Association—A Model to Follow

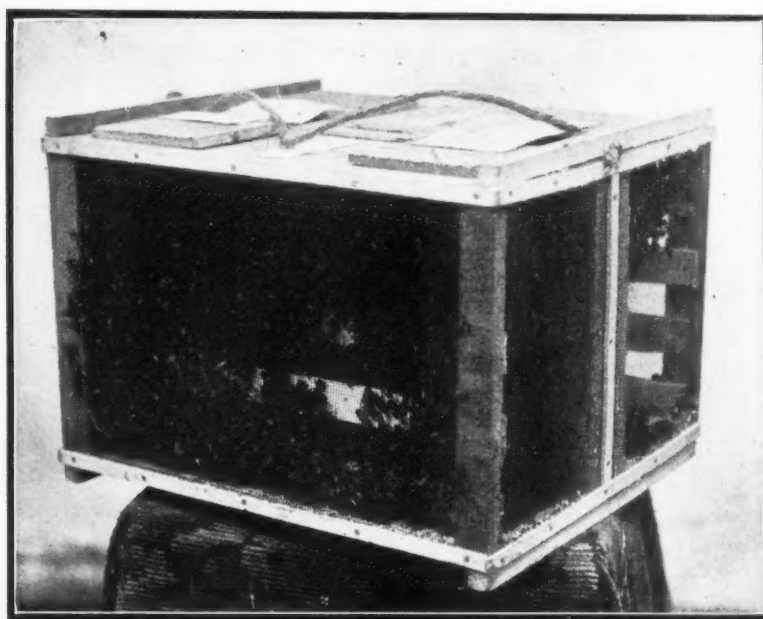
BY C. W. AEPPLER.

**A**BOUT one-half of the November issue of the "Schweizerische Bienenzeitung" (Swiss Bee Journal) deals with the horrors of the present war and describes the difficulties that have been encountered by the Swiss beekeepers in obtaining sugar for winter stores. As the Swiss beekeepers depend almost entirely upon sugar syrup for winter stores, it is difficult for us to realize how great a burden they are forced to bear, even though Switzerland is "a peaceful island lying amidst the howling billows."

When the war broke out in July, 1914, most of the beekeepers had no sugar on hand to provide their bees with winter stores. As usual, a high



OVER A HUNDRED POUNDS OF BEES READY FOR SHIPMENT



A PACKAGE OF BEES AT THE END OF A THOUSAND MILE JOURNEY

price was obtained for honey, and sugar could be fed very economically. The Swiss beekeepers must depend largely upon sugar shipped in from Germany and France. With a little successful diplomacy enough sugar was secured in October, 1914, to provide for winter stores, and so the bees were saved from starvation.

The Swiss Beekeepers' Association is scientifically managed, and this year sufficient sugar was secured for winter stores for the 224,000 colonies operated by its members throughout that peaceful nation. When we consider the size of that little country, with its many square miles of rugged mountains, our fears of overstocking should be lessened. The 1910 census credits Wisconsin with 95,600 colonies, and Minnesota with 56,600. We have many a lesson to learn from the Swiss beekeepers. If the beekeepers of the United States were as united as they are in one common motive, the question of overstocking, better markets and better prices would be a thing of the past. What we need most is a



powerful national organization modeled after "Des Vereins Schweizerischer Bienenfreunde" (Swiss Beekeepers' Association), and when the National meets at Madison in February, it might be well for us to incorporate some of their principles with ours.

Madison, Wis.

## No. 4.—Among Eastern Beekeepers

BY THE EDITOR.

LEAVING Altamont, late in the afternoon of Aug. 11, by way of Albany, we traveled 75 miles to Glens Falls, on the upper Hudson, at the foot of the Adirondacks. The road was by way of Saratoga. It is the best automobile road that I have ever traveled, not excepting European roads, for it is made of Tarvia or asphaltum and has no dust whatever. The meeting was called by the Adirondack Beekeepers' Association for the next day, at the home of Mr. H. E. Gray, one mile from the old

president of the Association, in his Ford.

Lake George was called "Horicon" by the Indians; "Lac St. Sacrement" by the French. Many of the terrible deeds of the French-Indian wars were perpetrated along its shores. Its beauty is nevertheless beyond description, despite its history. It is often said that Americans should visit America first. This is right. The resorts of Switzerland are not more beautiful than this one which compares favorably with the Lake of Thun. When our summer resorts are as old in civilization as those of Europe, there will be nothing for us to envy, in Europe. The main advantage of Switzerland is that its beauties are gathered together in a very small compass, while our country is immense and its beauties much scattered.

On Monday the 14th, I bade good-bye to my pleasant hosts, Mr. and Mrs. Gray, and left for Middlebury, Vermont. Before leaving I saw the immense paper mills of Hudson Falls, where mountains of cord wood are crushed into wood pulp for paper. Train loads after train loads of it are brought there from Canada and thousands of tons of paper produced. It seems as if we might eventually exhaust the forests, even of Canada.

On the way to Middlebury, the road passes Rutland, noted for its marble. In spots, the railroad embankments are filled with broken marble. This reminded me of Carrara, in Italy, whose marble is shipped all over the world, and through which we passed on our trip of 1913. Vermont marble does not seem inferior to it.

At Brandon, one of the passengers walked up to me and said: "Isn't this Mr. Dadant?" It was Mr. G. F. Hendee of Pittsford. He had recognized me from photos, though we had never met before. He was going to the Middlebury meeting.

Middlebury is located in a fine, broad valley, sloping towards Lake Champlain, between the Adirondacks and the Green Mountains of Vermont. It is a good region for bees, for I met many practical beekeepers and their crop of white honey was fine. Our readers know that it is at this point that one of the oldest contributors of the American Bee Journal, Mr. J. E. Crane, lives. He and his son Phillip manage something like 1100 colonies, all in chaff hives.

The meeting was held at the Addison House, about 40 beekeepers being present. Mr. F. D. Manchester, the secretary of the Vermont Association, had kindly invited me to stop with him.

At the meeting, the main subject discussed was "Swarm prevention" and I spoke on this myself, since it is one of my hobbies. One of the points I raised was the prevention of drone production, as the presence of drones incites bees to swarm. Mr. Crane made the remark that he had found bees to build drone comb on worker foundation and called upon his foreman to make a statement on this. About a dozen sheets of foundation, out of some 2,000, used by them during the season, were changed in this way. This was a surprise to me, although Mr. Latham had already exhibited to me about 2 square inches of comb which the bees had also built on foundation and which was worker on one side and drone on the other. Dr. Miller had pronounced this an impossibility, but it was a fact, just the same. My explanation is that at times in the laminating of the foundation it becomes slightly stretched when sticking to the cylinders. The least stretching the other way, or up and down, when given to the bees, causes the forming of larger cells than common which are then used for drone breeding although hardly large enough. The foundation which is drone on one side and



THE ROADS OF NEW ENGLAND ARE EXCELLENT

historic spot of Fort Edward. A pretty country, in full view of the Adirondacks, with the Hudson winding around in the woods.

At the meeting, there were as many ladies as men. The attendance was small, not over 35, but all practical people. They were all owners of large apiaries, none of them under 50 colonies. The crop was reported good and some anxiety was shown as to the probable price of honey.

Here, Dr. Gates left me to return to Amherst. I was to go alone by rail to the Vermont meeting. I remained over Sunday with the Gray family who had invited me and proposed to take me to Lake George. This trip was made with Mr. Geo. L. Cary,

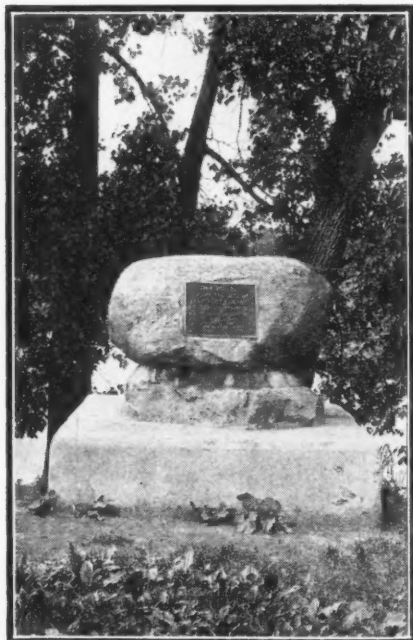


H. E. GRAY IN HIS APIARY AT FORT EDWARD, N. Y.

worker on the other must be defective in wall outline and the bees must be very desirous to have drone comb, when they overlook the shape of the base to produce such irregular combs. The only redeeming feature to this disagreeable performance is the very small proportion of such combs built, about 6 per thousand in the Crane experience. Yet, in the manufacture of foundation we ought to be able to forestall this entirely. When it happens, the only way is to remelt such combs and replace them with perfect ones.

At the Manchester home, that evening, I saw a sample of success with very large hives. Mr. Manchester uses 11-frame Langstroth hives, with supers holding 40 sections and he had a tremendous crop of clover honey, both alsike and white clover. In many sections of the East, alsike clover grows wild in the meadows and the pastures.

At this place I also tasted pure dandelion honey for the first time. We often see the bees on dandelion blossoms, but with us they never harvest enough to make a surplus. I was skeptical on this subject. However, when Mr. Manchester put a section of dark yellow honey upon



MONUMENT MARKING SPOT WHERE STOOD  
OLD FORT EDWARDS

the table and I took a mouthful of it, I recognized without doubt the flavor of dandelion, not bitter, but strong, with a very positive scent of the bloom.

That evening we visited Messrs Larrabee and Holmes, apiarists living some 12 miles away. The weather was delightful and a clear full moon gave us almost as fine a light as daylight. We drove clear down to Lake Champlain, at Larrabee's Point.

The next day, I called on our old friend G. W. Fassett and afterwards on the Cranes with whom I stayed for lunch. We took a ride in one of their autos to an outapiary located

at the foot of the Green Mountains, in the shade of the pines.

Mr. Crane has a very nice method of inducing the bees to finish the outer sections of a crate, at the same time preventing them from staining the sealed central sections by traveling upon them. When all but the outer rows are filled he uses under the crate a honey-board, which is closed in the center and open on both edges. This compels the bees to pass first to the open unfinished sections, which they fill more readily in consequence. Mr. Crane is the originator of the corrugated-paper shipping case in which each section is isolated. They were preparing the crop for market and had a half dozen men scraping and packing sections. They have numerous swarms, but have a great demand for bees every year from the cucumber growers, for hot houses. They get rid of their extra colonies in this manner.

Mr. Crane is foulbrood inspector. He reports great improvement in conditions over former years, but much work still remains to be done. In his opinion the movable-frame hive, with combs built crooked in the frames, is the greatest hindrance to the cleaning up of the disease. Better have box hives than frame hives with immovable frames, owing to crooked combs.

A Vermont beekeeper, Mr. C. H. Crofut, of Arlington, who was like me invited to lunch at the Crane home, quoted to me a popular rime descriptive of the things in which Vermont excels:

"Horses, maple sugar and beautiful women.  
The first are fleet,  
The others sweet,  
And all exceeding hard to beat."

Fleet horses and pretty girls are also a claim of Kentucky. But then aren't the girls pretty everywhere? And isn't honey a product of both

Vermont and Kentucky, and sweet too? In my opinion, the rime must be rewritten, including honey in the desirable products of Vermont.

I was pleasantly disappointed with the part of Vermont which I visited. I was looking for rough hillsides, stone fences and other evidences of a mountainous country. I saw beautiful fields and pretty cities. But the mountains were not far away and I am told there is plenty of rough country.

I next went back to Amherst, where I was to meet Mr. Bock, the Englishman sent to the United States by the British Beekeepers Association to study our bee paralysis and compare it with Isle-Of-Wight disease. This will be the subject of my next letter.

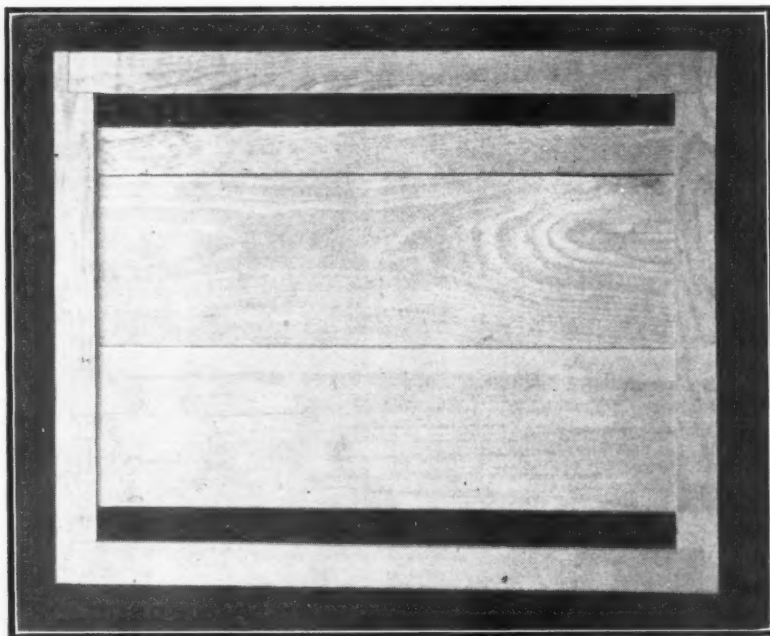
## Shipping Full Colonies and Nuclei

BY H. D. MURRY.

A CORRESPONDENT noting my uniform success in shipping full colonies and nuclei, never having a single loss, desires that I tell through the columns of the American Bee Journal just how I "do the trick." It had never occurred to me that there was any trick about it.

The first experience I had along that line was in the latter part of January, 1906, when I shipped 18 full colonies from Jackson, Miss., to Alice, Tex., in a car of household goods. The bees were in 8-frame dovetailed hives with Hoffman self-spacing frames, the combs built from full sheets of medium brood foundation in wired frames. The entrances were the usual  $\frac{3}{8}$ -inch and full width of the hive.

I had observed that in moving bees from one apiary to another, the bees have a tendency to cluster on top of the frames. As these colonies had a strong force of bees, I reasoned that it



MR. CRANE'S BOARD FOR FINISHING SECTIONS ON THE EDGES OF SUPERS



would require considerable space above the frames to accommodate them, so I made a rim of one inch lumber two inches deep to fit the top of the hives, and covered that with wire-screen, such as is used to screen windows. On top of the wire I put a second rim of  $\frac{3}{8}$ -inch stuff to hold the wire firmly in place and stop any leaks that might occur from the buckling of the wire. Before placing the screen on the hive I nailed a piece of  $\frac{3}{8}$ -inch stuff lightly across the ends of the frames. When the screens were placed in position, the end piece of the screen frame rested on that  $\frac{3}{8}$ -inch piece and prevented the frames from bouncing up and down while in transit. The entrances were closed with wire-cloth to give upward ventilation.

Although the weather was warm, as we have it in the South sometimes, there was no provision for watering the bees *en route*. They were on the road just ten days, traveling about 1000 miles. The weather turned quite cold about three days before they reached Alice, but had warmed up again when they arrived. Upon arrival they were moved to their permanent location and released. I did not travel with them, but left them to the tender mercies of the railroads and went through on the passenger trains. When I released them, I went through the hives to see how they had stood the journey. They were all in perfect condition and most of them had a patch of sealed brood in one or two frames. I said all were in perfect condition, but there was one colony smashed up pretty badly. Evidently it had been dropped by some brakeman or other person who had occasion to handle the shipment.

I have gone fully into details about this shipment in order to give the reader a fair chance to draw any lesson from it that it may contain. Since that time I have shipped full colonies by express to various distances, from 200 to 500 miles in winter and summer, and I have yet to lose the first colony. There is, however, this difference between shipping colonies in winter and summer: If I ship in summer, I place an empty comb filled with water in the hive, or water the bees well just before they are loaded on the car. I have also used a screen only one inch deep. If the colony is not very strong that is sufficient. The idea I have in mind is to give the bees room enough to cluster above the frames, if they desire to do so.

I have shipped 1-frame, 2-frame and 3-frame nuclei to various parts of the United States; many as far east as New York State and as far north and west as North Dakota and Minnesota. If any ever failed to reach their destination in perfect condition, the fact was never reported to me.

In packing nuclei for shipment, I have used the ordinary nucleus shipping cage as sent out by our supply houses, and a cage that I make myself, with equal success. The cage I make differs from the factory-made cage in that the ventilation is provided at both sides instead of the bottom and top as in the factory-made cage. If three or more of my cages are shipped in one parcel it is necessary to space them an inch apart for ventilation, while the factory-made cages may be crated closely together. My cage has solid bottom and top. A piece of wood with

notches to accommodate the bottom-bars of frames is nailed in the bottom of the cage, about the middle.

The frames are put in place, a piece of wood  $\frac{3}{8} \times \frac{1}{2}$  inch is laid across the frames at each end and lightly nailed. This  $\frac{3}{8}$ -inch piece comes flush with the end-piece of the cage, so the cover holds it firmly in place, and it in turn holds the frames in place, preventing them from bouncing up and down. Three light nails, such as are used in nailing up frames, are driven through each end of the cover into the end-piece of the cage. Side pieces come up flush with the top of the cover and are nailed to it with about three or four nails on each side. A light rope handle is attached by nailing and stapling each end of the rope to each end of the cage. One rope is sufficient for a crate of five or six nuclei. A request, "Keep out of sun," and "Pile nothing on this hive," is stenciled on the top of one cage in each crate.

I think the kind of cage used is not very important, just so it provides ventilation for the bees, holds the frames in place, prevents the escape of the bees and is light, so as to avoid excessive transportation charges.

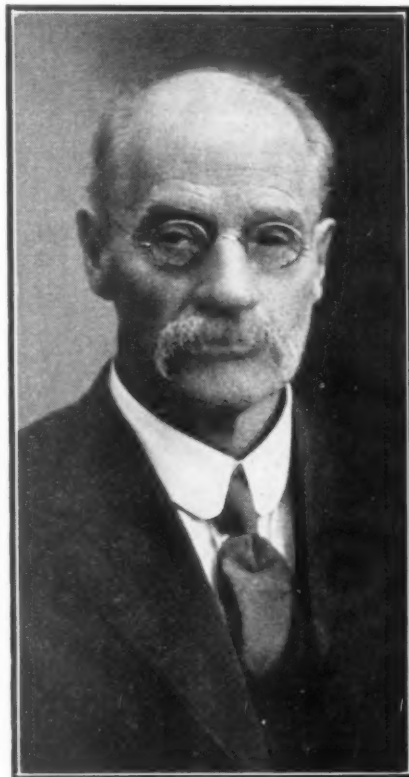
The important thing is what goes into the cage to form the nucleus. I take it that my customer wants a start of bees, and I put in enough bees, brood, etc., to start quite a prosperous little colony from the start. If it is only a 1-frame nucleus, I select a comb fully half filled with sealed brood, some empty cells, and enough honey to last the nucleus to its destination and some over to help in starting brood after arrival. The empty cells are filled with water, and about as many bees shaken into the cage as are sufficient to well cover both sides of a Langstroth frame or comb. This, with the brood that will soon hatch out, will make quite a prosperous little colony. In a 2 frame nucleus I place the equivalent of about  $1\frac{1}{2}$  frames of sealed brood. The other two-thirds of a comb should be about half honey and the other half filled with water. In practice, the honey will be at the tops of the frames and empty cells at the bottom, which I fill with water.

A 3 frame nucleus may contain one frame entirely filled with sealed brood which I place in the center of the cage, and the other two combs should have about an inch or an inch and a half of honey at the top, and the balance of the combs about equally divided between sealed brood and empty cells to be filled with water. Enough bees are put into all nuclei to well cover both sides of all combs. In actual practice it is not always possible to find combs with brood, honey and empty cells arranged in any certain way, so these statements must be understood to indicate the amount of those things I use rather than the arrangement of them. The amount of honey may vary with the distance the shipment is to go, always bearing in mind that my customer may be an amateur, and not know what to do with hungry bees, so enough honey is included to carry the bees to their destination and some over to enable them to recover from the shock of shipment and make their start at brood-rearing.

If a queen is to accompany a nucleus, she is caged in a provisioned three-hole cage, nine attendant bees caged

with her and the cage pressed in under a comb between the bottom of the comb and the bottom-bar, wire-cloth side up, and the candy-hole against an end-bar to prevent the bees from releasing her before the shipment is delivered. Instructions are given to the customer how to let the bees release her. If, for any cause, the queen is released *en route*, there is no real damage done, but I like to have my customer able to find the queen, which he may not be able to do if she is out among the bees. Care is taken to place the cage where no water will jar out of the combs into the queen-cage.

As I have never had any failures I may not be in a position to point out the elements of success; but the points



J. E. CRANE

I regard as important are shipping nothing but sealed brood, plenty of bees, plenty of honey to carry to their destination with some left over, and plenty of ventilation, using only combs that have had brood reared in them for at least a year or two so as to make them tough, and those combs built from a good grade of foundation in wired frames.

Mathis, Tex.

## The Flight of a Bee

BY J. E. CRANE.

**H**AVE you ever stopped to inquire how a bee flies? Why does it have four wings when a fly has only two? How can it fly backward as well as forward? Bees are governed by physical laws and are controlled by them as well as larger animal life. In these days when man has learned to navigate the air it is of special interest to inquire how the bees are able to



do so and their wonderful adaptation to their out-of-door life.

We see the need of four wings in place of two, because they can be quickly hooked together for flight, giving them a larger wing surface, for they have not only to carry themselves through the air as a fly does, but they have to carry heavy loads of nectar and pollen. When entering the hive the wings may be separated and folded in a small space so as not to interfere in their movements in the hive or in entering the cells.

Have you ever noticed the strong rib at the front of the forward wing, which appears to explain the secret of the bees flight? If the wings are united and their surface parallel with the body of the bee, we see how with wings thus spread they go through the air with little exertion. Then if the wings are turned so their surface be at right angle to the body and quickly forced backwards we can readily see how the body of the bee will be forced forward, just as a small boat is pushed forward by the oars. If the wings when spread are forced downward, or upward, or forward, the body moves in the opposite direction.

Have you ever seen a bird fly backward? Think quickly, "No!" "Yes!" There is the humming bird; have we not seen it fly to a deep-throated flower to get a sip of nectar, or perhaps a choice tit-bit of insect and then back out and rising an instant in the air to see who is watching, dart away? Evidently the flight or wing motion of these tiny birds is much like that of the bees, and so we call them *humming* birds.

Have we ever stopped to think of the number, variety and power of the muscles required to produce the varied motions of the four wings in the flight of a bee? Have we ever thought how these powerful muscles are enclosed in a little somewhat globular case, the thorax, but little more than one eighth of an inch in diameter, already occupied with the muscles required for the movement of the six legs of the bee? Have we ever thought of the rapidity of their movements? Not far from 40 miles an hour, with 500 vibrations of the wings each second it is estimated. Have we ever inquired what sustains such energy? What kind of food can they use to give them such power? We surely get a new idea of the value of honey as food when we notice what it does for the bees, how it sustains them during long flights, perhaps over hills and against a heavy wind, while carrying half of their own weight of honey and pollen. We can realize something of the muscular energy required for such flights when we see the bees drop on the alighting-board panting for air and stopping to rest before they enter their hive. Again we learn something of the exhaustion of such flights from the rapid loss of bees or the decrease in population of a hive when no young bees are emerging.

We have sometimes found the bees in a new colony to decrease from one-half to two-thirds in three weeks. This is more noticeable if honey is scarce or the bees have to fly a great distance to find it. I have many times found it a decided advantage to give such colonies, a few days after hiving, two or three combs of emerging brood that young bees might take the place of

those that have worn themselves out and died.

It is interesting to note how bees are guided in their flight. Birds have tails to assist them, and boats have rudders, but bees have neither; consequently bees have to guide their flight by their wings much as a man in a row boat guides it by his oars, one a little faster or slower than the other when the direction is changed. As a result the flight of bees is not as accurate as we have sometimes thought, and a bee line is not a straight line. If we stand upon a little eminence or hill with the bees coming toward us in the late afternoon, we may see them for a long distance and observe their flight with ease. We can see how a bee flies first on one side of a straight line and then on the other. It would seem as though they set their wings as nearly as they can for a straight line, but are not quite accurate and are carried to one side; then change their flight to correct the error which carries them to the other side of the line, thus making their line full of gentle waves.

It is interesting to note the intelligence bees exercise, in flying, to save their strength. If it is windy they fly low where the vegetation or other ob-

jects obstruct the wind to some extent. Or they may keep in the shelter of a fence or a forest, although the distance to travel is farther. They have been known even to go around a hill when they knew the way rather than over it because it was easier; their instinct teaching them how to save the hard labor of climbing the hill. Their instinct, if it is instinct, seems to serve them even better than the reasoning powers serve man, for we have found roads laid out over hills when it would have been no farther and much easier to have laid them around the hills.

Middlebury, Vt.

## Beekeeping in the Imperial Valley

BY HOMER MATHEWSON.

IMAGINE yourself in a level country, a valley situated in southern California, about 150 miles long by 50 wide, and the greater part below the level of the sea, the lowest point being 268 feet. At some period in ages past this was a great inland sea.

In this country the annual rainfall is



NO. 1.—LOOKING DOWN THROUGH A "RAMADA"



NO. 2.—THE REAR OF THE EXTRACTING HOUSE WITH HONEY TANK IN THE EXCAVATION

less than two inches, and there are no fogs, yet there are miles and miles of water (irrigation ditches). Here the snow never falls; during the months of December and January some few frosts occur, sufficiently severe to kill most tender plants; ice on still ponds sometimes reaches a thickness of one-eighth inch.

During the months of February and March there are strong winds, corresponding to the March weather in the East. In April it grows warm and soon becomes what the cotton planters call cotton weather, *i. e.*, warm days and nights. The heat is never broken by cold snaps. This continues for some three months.

During August the thermometer often reaches 120 degrees in the shade, but the extremely dry atmosphere causes the sensible heat to resemble that of 90 degrees in the eastern States.



NO. 3.—CANS FILLED READY FOR SHIPMENT

In midwinter and again in midsummer one or more light local showers may be expected; during the season of 1916 no rain of importance fell from February to November.

This industry came with the early settlers, in the year 1900. Among the first were Henry Perkins, J. W. Huff and a Mr. Jones. Mr. Perkins had the honor of shipping the first car of honey from the valley. Among the successful men of today I will mention J. W. George, W. W. Fairchild, J. W. Huff, D. O. Page, M. S. Phillippe, L. Logan and F. J. Severin. These men may be styled "Men whom the bees keep."

#### SPRING MANAGEMENT.

The successful man has learned to prepare for the year's harvest the fall previous, by inducing late breeding, thus having a large percentage of young bees for the winter. Such management, in a measure, prevents "spring dwindling," and gives a larger number of workers to begin the harvest.

#### SOURCES OF HONEY.

Pollen is gathered as early as January from cottonwood and wild hollyhock. Sometimes as early as Feb. 18, some honey is gathered from the wild hollyhock. This may be called the first stimulation. It is followed by arrowwood which furnishes a fine flavored honey; many think it adds to the flavor of the early alfalfa. In some locations where willow grows it furnishes a fair

flow for a limited time. The great fields of cantaloupes furnish some honey, the flow from this source lasting about a month.

About May 18, the flow from alfalfa commences and lasts through May, June and into July. The flow is slow but of long duration. Oftentimes when conditions are favorable, when nights and mornings are a bit humid, the bees simply "roll in" the honey. In normal years there is often a short flow in September. An operator is able to work but two yards, and he needs to hustle to do even this. Many of the beekeepers say that cotton furnishes honey, the long staple variety being the best. Nearly every town in the valley has its gin, and there is an oil mill. I predict that the cotton interests will increase. At present there is no boll weevil, and such perfect weather to harvest the crop.

#### GENERAL CONDITIONS.

The acreage of alfalfa is on the decrease, that of cotton and corn on the increase. The growing of cantaloupes has been on the increase, and from this source some honey is produced. For the past two seasons there has been a shortage of water during July and August, caused by the ditches silt-

ing up. The alfalfa is allowed to dry out and the little water available is used on cotton and corn. Many of the beekeepers complain of the cold winds in the spring retarding brood-rearing.

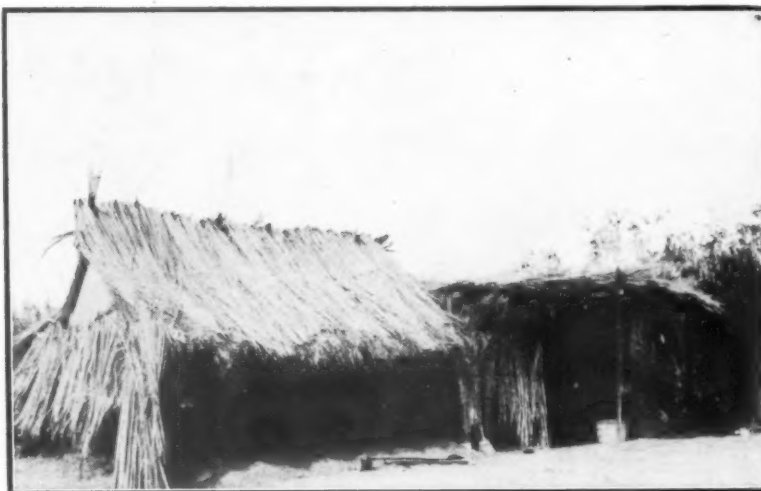
Summing up it would seem that the acreage of alfalfa was at least 30 percent less than formerly, that the flow from cotton and cantaloupes does not make up the deficit, and the honey crop has fallen off in the last three years from 30 to 50 percent, yet the market price has increased. The bulk of the crop is marketed in Los Angeles and other coast cities. The color of the honey is not so light as that of Nevada or Colorado. The extreme heat might be a small factor.

#### CROPS.

Very little comb honey is produced, and none shipped; extracted has in past years sold as low as three cents, yet this season the average is near 6½ cents. From 30 to 40 cars are shipped annually; beeswax sells around 25 cents. A foreign buyer is reported to have bought nearly all available supply in the valley.

#### DISEASE.

Disease has appeared, yet it is well under control, only a few apiaries hav-



NO. 4.—LIVING QUARTERS OF A BEEKEEPER DURING THE HONEY SEASON



NO. 5.—VIEW OF THE APIARY FROM A DISTANCE



ing any trouble, and by the aid of the stringent law in force it is hoped that the situation may grow no worse. There are many drawbacks, drone layers, mismating, robbing, poor pasture, cranky neighbors, who make all manner of foolish demands, the person who seems to think that "God helps him who helps himself," thieves, they are well represented. I might name others, yet if a man is of the "Johnny on the spot" order, he can stand all at a small loss.

#### YARD EQUIPMENT.

Assuming that you have the bees, the next accessory is a *Ramada* or shade for them. It consists of a framework of wood over which wires are drawn, and then a layer of arrow-wood across with a second set of wires on top to keep the wind from blowing the covering off. The hives are arranged in rows and the operator works between the two lines. Figure 1 shows the general form of a ramada, end view. Figure 2 shows the rear of an extracting house, with honey tank sunk in the ground, with a side view of the ramada also. Figure 3 shows an extracting house, tank, a lot of filled cases and a pile of empties.

The bee-men in charge often live at the yards, and many unique structures they build. Illustration No. 4 shows a house with a sleeping room and kitchen. Some of the beekeepers in the colder States might think it somewhat limited, yet it is very comfortable. It consists of a frame work covered with mosquito netting and a cover of arrow-wood to keep the sun off. Figure 5 shows a general view of a yard from a distance. Figure 6 shows a yard where all hives are covered by two thicknesses of burlap sacks, as a protection from heat. Figure 7 shows a yard a model for neatness and arrangement, everything being in its proper place.

The preference is given to the 10-frame size, yet a few of the 8-frame are in use.

#### NUMBER OF COLONIES.

It is estimated that there are more than 20,000 colonies in the valley; some think as many as 22,000. With this number of colonies and the existing conditions, the valley seems overstocked, and I would not advise any one to go there for the purpose of beekeeping without first investigating. Very soon more land will be watered, and if it is sown to alfalfa there will be a betterment of conditions.

#### PESTS.

Alfalfa is seriously damaged by the ravages of grasshoppers which have appeared in great numbers; another pest is the yellow alfalfa butterfly (*Eurymus eurytheme*), which is so common that the county is furnishing the farmers poison in an attempt to eradicate it. Bermuda grass is another pest. The seed comes in the irrigation water. Getting a start in the fields it overcomes the alfalfa. It gives some feed, but is not nearly so good as alfalfa.

#### INCREASE.

Increase is made usually by division, letting the divisions rear a queen from their own brood. Some think that the queens shipped in do not do as well at first as those of local production, a climatic condition I infer.

There are no queens bred in the valley for market. Many rear their own, and requeening is done soon after the honey flow, which may be August or September. Many think that it is not best to try to rear queens at the warmest part of the summer, claiming that the heat affects the vitality of the drones, thereby causing a great percentage of drone layers, a condition found only too often.

A large percentage of the better beemen requeen as often as every two years, and many every year. The fame of the Imperial honey has traveled far and wide, and dealers from everywhere are looking here for honey, many having orders they cannot supply.

Lexington, Ky.

## Marketing Honey

BY A. F. BONNEY.

**A** PERSON does not have much of a show when contending with the Editor (a big E please), but the American Bee Journal has treated me fairly by printing some of my "stuff," so I shall again try to reach the public eye with something about selling our sweet product.

In the American Bee Journal for December, Mr. Pellett (page 414) suggests that "Honey is, toward glucose and all corn syrups, in the same relative position as butter is placed toward margarine. Yet butter is not neglected

garding the butter imitations have been in force for a generation, I think.

Butter does come in competition with the oleo compounds, for each and every packing house makes millions of pounds of butter imitations annually, and honey will not have the protection butter has (while some of it is strong enough to protect itself) until honey producers are as numerous as farmers who send out butter in tons instead of pounds, as we, relatively, do honey. I have not the figures by me, but I know that the money value of butter in the United States runs into the hundreds of millions of dollars. The value of the honey crop will not reach \$50,000,000.

Of late years "butter substitutes" are more in demand than the straight oleomargarine, which is "a granular, solid fat produced from the leaf-fat of cattle." The pure oleo was at first salted, colored, and sold to take the place of butter, but the grain, perceptible in the mouth, betrayed it, so the manufacturers soon began making a mixture of oleo, cotton seed oil and pure butter, which did away with the grain, and this imitation of butter is so good that wife and I prefer it to the uncertain butter we are able to buy in a "country" store where we should be able to get the best.

*Mind this.* Oleo compounds, imitation butter is sold to take the place of butter on the table. It looks like butter, smells like butter and tastes like



NO. 6.—BRAN SACKS ARE USED OVER HIVES TO PREVENT EXCESSIVE HEAT

for margarine as honey is for glucose," meaning, of course, glucose compounds.

Mr. Pellett having had legal training, is a specious debater. In this case, however, while sincere and earnest, he is, I think, mistaken. Honey is not in the same relative relation to glucose compounds as butter is to oleomargarine compounds, generally called "imitation butter, butterine," etc., for there are stringent legal enactments regarding the use of oleo compounds intended for consumption as butter substitutes. There is a small tax on the sale of *un-colored* compounds, but a tax of *ten cents a pound* on the colored stuff. There is nothing of the kind regarding honey, and until the pure food laws were passed any one could adulterate honey all they chose, while laws re-

butter, so much so that I defy any one to tell the "butterine" I use from good creamery butter, particularly if it be colored, and the user can color it himself with little capsules of butter color packed with the butterine.

With all due deference to the Editor, there is no such relation between honey and corn syrup compounds. These masses are mixtures of artificial glucose—made of corn starch and sulphuric acid—and cane or beet sugar syrup in the proportion of 90 percent glucose to 10 percent sugar syrup. There is so little sweet in them that a person may eat large quantities without surfeit, and I have seen children pour ounces of the stuff on a cake and eat it. There is no question in color, and the corn syrup does not take the



place of honey, as honey was not generally used before glucose was discovered, as butter was used before oleo was made. Moreover, so surfeiting is pure honey that if the glucose compounds were not available, sugar syrup would be used, as it was generally when I was a boy.

I want to impress it on the minds of my readers that I am writing for honey producers, not the laity. Not one in ten thousand non-producers of honey will see this, and that is why I reiterate that while I like honey I do not want it every day. The same with maple syrup, common and cheap when I was a boy, which I tired of quickly and went back to the syrup mother used to make of "C" sugar, I think it was, a light brown and a very sweet article. My next delight was "New Orleans molasses." Gee! but it was good! Honey is so rich and sweet that it is cloying, and while it is a pre-digested food, or partly so, is apt to disagree with some stomachs, so that, as sellers, our last condition is worse than our first. We have lost a customer. I honestly believe that were we to advise people to mix a thick, warm syrup half and half with honey we should see largely increased sales. I have even thought of putting such a compound on the market, but there are many reasons why we should not, though while it would not *cheapen* honey it would no doubt largely increase its consumption.

Oleo compounds, "butterines," take

year's honey advertising experiment I am going to start a campaign with hotel keepers to use a card or a sign to read: **BONNEY HONEY SERVED HERE.** (What would the world do without **BONNEY HONEY**?) If others would do the same for their product it might greatly increase the consumption of our goods. **BUCKWHEAT CAKES AND HONEY TODAY**, would look good, while a small individual cream jug of the sweet would fill the bill.

The marketing of honey was pretty well discussed at the last Iowa Beekeepers' Association in Des Moines, and to my mind this was demonstrated: Each man must dispose of his own stock, locally, by retail if possible, or at least to the stores, and it were vastly better for him to sell at 8 cents to local trade than 7 cents to some jobber, while there is no reason on earth why 10 cents cannot be made the minimum price in Iowa for large quantities, and better prices for mail containers. One of the best things I ever hit on was an advertisement in local papers: **BRING YOUR OWN CONTAINERS AND GET BONNEY HONEY FOR 10 CENTS A POUND.** One man brought in 20 quart Mason jars. He remarked: "I would have brought in a big can, but I thought I had to have the jars." He paid me \$6.00, and I was ahead the price of a 60-pound can.

This, of course, calls up the question of advertising, but for small towns this is a simple matter, a sign conspicu-

est form of advertising we can get. Addressing thousands of cards and envelopes and folding circulars is no small task. As a circular or card is read by not much more than one person, and a newspaper advertisement by one to five persons, the paper has the larger circulation. If "local" advertising is resorted to at about 5 cents a line, practically every reader of the paper will see it.

As to prices, honey producers are foolish and unwise. Actually, **HONEY** is the **ONE THING** which has **NOT INCREASED IN PRICE** in the past two years. This is almost unbelievable, but at our association meeting a member got up and declared that 7 cents was a fair price for honey. True, he later said 20 cents was a fair price, but the damage was done, as a reporter was present and his nimble pencil got the 7 cents. He was not present when the 20 cents was quoted. The gentleman was talking from the jobber's standpoint, as he handles large quantities of honey annually. I hope to live to see the day when white clover honey will bring more than 7 cents per pound. If I do I shall see it sold without the aid of the middleman. Sixty percent is now sold locally, according to government reports. If every one will try to sell locally, or at least without the aid of the jobber, we can average a fair price for our surplus stock.

It is claimed that the low price of honey is due to the fact that it is a "luxury." Well, ice cream is a luxury, more so really than honey, yet the people of the United States last year spent **ONE AND A HALF BILLION DOLLARS** for ice cream. The soda fountains made it possible for one thing. While our raw material costs us nothing theirs costs dollars, yet we sell less than \$40,000,000 worth of honey. Forty million dollars compared to **ONE AND A HALF BILLION.** How may we explain it?

One great error has been fastened onto us, owing to the fact that if comb honey is not sold by Christmas, it is apt to granulate. Honey producers have for a generation or more been urged to get rid of their crop early. It seems that producers of extracted honey are so imbued with that idea that they are in a panic to sell at any price. Mr. Root told us in Des Moines of a case this year where his firm was offered some perfectly good white clover honey at 5½ cents a pound. I refused an offer from them of 7¼ cents f. o. b. Buck Grove, but then it was Bonney honey.

Buck Grove, Iowa.

**DEAR BONNEY:**—I did not say that butter and oleo, and honey and corn syrup sustained the same relation in the sense that you give. What I said was that because of the organization and interest of the dairymen there are laws regulating oleomargarine, and this same agitation has made a strong prejudice against oleo. On the other hand, the beekeepers have slept quietly and allowed the corn syrup fellows to take the syrup market without acquainting the public with the superior quality of their product. I did not attempt to make any other comparison. I only tried to show that the same prejudice against glucose would have existed if the same effort had been made. If you were a lawyer instead of a doctor you



NO. 7.—APIARY OF F. J. SEVERIN, A MODEL OF NEATNESS

the place of pure butter on hundreds and thousands of tables, public and private, and here is something else to show Mr. Pellett's error: If a public place, even a popcorn "stand" uses oleo compounds a sign of specified size must be posted, "**WE SERVE OLEOMARGARINE HERE.**" As corn syrup compounds compete with honey and pure sugar syrup, very common in the South, while they are a substitute for nothing, the users cannot be compelled to put on such a sign or anything similar while we may sometime be able to induce hotel men and restaurant keepers to post signs **IOWA HONEY SERVED HERE, or PURE HONEY SERVED HERE.** For next

ously displayed, **HONEY FOR SALE**, in connection with a good label is all that is needed. When one goes to branching out it calls for more printer's ink, but if in a town of 300 to 500 and the adjacent countryside a man cannot dispose of several thousand pounds of honey at a cost of a fraction of a cent per pound for printing, there is something wrong. In most county seat papers an advertisement an inch deep by one column wide can be had at about 15 cents per week or 60 cents per month, and it would be very strange indeed if the bill could not be paid in honey. Considering the work necessary to send out cards and circulars, the newspaper is, probably, the cheap-

would not need a translation. However, if you get by the Editor it is all right with me. FRANK C. PELLETT.

[Evidently the misunderstanding comes from my having quoted Mr. Pellett in the manner mentioned by our old friend Dr. Bonney, for this matter on page 414 is of my own writing. As they are both good-natured in their banter, the reader will enjoy it, for the question of margarine *vs.* glucose is interesting in their relation with butter *vs.* honey.—EDITOR.]

## Bees in Banks

BY BURTON N. GATES.

THERE seems to be a current of simultaneous originality among banking concerns in the use of honeybees as an advertising medium. The American Bee Journal in November, page 387, shows the window display of a Chicago bank wherein bees are used to typify those desirable saving qualities which should be cultivated by the human race. As this display attracted large crowds of interested spectators, so a similar bank window attracted thousands in Springfield, Mass., during the National Dairy Show Oct. 12 to 21. This neat display was made by the Commercial Trust Company, the material being furnished by A. H. McCarter, of Springfield.

One emphatic lesson taught is expressed on the card in the show window, "Take a lesson from the honeybee. Store up a little something each week in this bank for the future." Elsewhere in the window display were numerous home-saving safes which were linked to the general exhibit by this legend, "These little banks are to you what the honeycomb is to the bee. One dollar opens an interest account here." Another legend is, "An example for you, the bees believe in preparedness."

The bank also cordially inserted a card advising those interested in bees to visit the Massachusetts Board of Agriculture display of beekeeping materials, honey and bees, at the State Building on the Exposition grounds, where the National Dairy Show was held.

Amherst, Mass.

## When to Requeen

BY F. M. PERRY.

I WOULD not requeen in proximity to the main honey flow, whether it be just before, just after, or during the flow. Before or during the flow the colonies are populous, queens are hard to find, and no colonies would have their honey production increased by bees hatching from the new queen later on.

After the honey flow is the better time, though this tends to increase the strength of colonies after the need for bees to gather is past. Besides the chances of the queen being killed in introduction are greater. The beekeeper also runs the risk of loss of some good queens during winter and before their qualities have been tested.

The foregoing applies of course to queenright colonies. Queenless colo-

nies should be requeened as soon as found.

But the best time of all to requeen is early in the spring. Why? First, because by putting a good queen in a colony that has a poor one, or only a medium one, two months or more before the honey flow, the beekeeper gets a good force of workers, quite often double the number he would have had with the old queen, and so a larger crop of honey. Second, you still have the young queen of improved strain with which to improve your stock later, if desired; and third, you can make the introduction when the old queens are easily found, and when nearly every queen will be accepted.

Then, another thing, you can test your queen for the honey-gathering

qualities of her bees, for her breeding ability, and the gentleness of her workers, within so short a time that you can be sure that any defect that may show is in the queen herself.

A large amount of honey goes ungathered every year, because the poorest colony is not as strong as the best. Why not have them all best? It is an old saying among beekeepers, that the colony that gives the big yield this year will not do much next year. Why? Is it not because the queen has done so well that the bees do not see the need of superseding her at the end of the honey flow? It is not the number of bees you have in the apiary, but the number you have in each colony that counts when you come to the main honey flow. Bradentown, Fla.

## CONVENTION



## PROCEEDINGS

### Queen-Rearing for Northern Latitudes

The results of a very interesting series of experiments in queen-rearing at the University at Madison, Wis., was reported in a paper read by Mr. C. W. Aeppler, at the Wisconsin meeting. Mr. Aeppler is specializing in bee-culture at the University, and had charge of the queen rearing last summer.

In the North the same methods of queen-rearing as in the South will not apply owing to the climate. The nights and even the days are cool up to June 15, and even later. Mr. Aeppler found that the Doolittle method of having cells built was not so successful for him in early spring as the Alley or Dr. Miller methods.

#### CHOOSING THE CELL-BUILDERS.

Not all colonies are equally as valuable as cell-builders. Out of 50 colonies only six proved good cell builders. Of these, two were especially valuable for the proportion of cells built. Both of these had queens of the previous August, and both were reared from the same mother. His conclusions were that the cell-building colonies should be carefully chosen from colonies having young and vigorous queens. This would also minimize the attempts at swarming of such colonies.

#### MANAGEMENT OF CELL BUILDERS.

The colonies chosen were stimulated both by feeding and by the addition of sealed brood to get them as strong as possible. When ready to have cells built, all of the sealed brood and most of the bees were placed in an upper story with a queen-excluder between. Between the upper and lower stories was also placed an escape-board, partly of screen wire, with the escape opposite to the usual method, so that the bees could go above, but none go back. The object of the screen is to give the bees above as much warmth as possible, while Mr. Aeppler finds that with the escape placed as indicated, he gets a few young bees to go upward and help strengthen the colony.

The entrance of the cell-building upper story is a one-inch hole on the back side of the hive. This allows the

old bees to return at once to the old front entrance, leaving only young bees in the cell builder. The small entrance also helps retain the warmth and prevents robbing. Mr. Aeppler stated that often the bees would cluster all over the back of the hive during cell building.

Both stories were fed stimulative when necessary, with an Alexander feeder, and more sealed brood was continually added to the cell builder as the season advanced. Cells were readily accepted in any kind of weather.

#### THE CELL CUPS.

Experiments were made with different sized artificial cell-cups, and on a large number of colonies. Cells seven-sixteenths of an inch in diameter and three-fourths to one inch in length were the most readily accepted and most promptly capped. This is the cell-cup size before being given to the bees for 15 or 20 minutes for polishing before inserting the royal jelly and eggs.

#### COVERS FOR CELL BUILDERS.

The hive cover for all cell-building colonies is made in sections so that the frame of cells may be placed or removed with as little disturbance to the colony as possible.

Cells are left in the cell builder for about 24 hours, when they are placed in other colonies for finishing.

#### NUCLEI.

No success was had with baby nuclei. Mr. Aeppler now uses regular 10-frame hives partitioned off to make three nuclei with entrances on different sides of the hive. Thirteen to 20 cells are given to each colony. At least 90 percent of the cells given are accepted.

We quote an interesting passage verbatim, concerning the greater or less readiness of bees and other beings for rearing their young:

"The number and value of the queen-cells that can be secured by the beekeeper depends entirely upon the cell builders. This is the writer's conclusion after two years of experimenting on this particular point. We have all



noticed that some mares will nurse a colt better than others; that some cows treat a calf kindly and will nurse it, whereas its own mother will not; that a certain brood sow can nurse 12 pigs better than another will nurse six. It is a question of individuality and behavior. We have the same conditions present in queen-rearing. Not all colonies are cell-builders. One will accept a batch of 20 cells and complete them all; another may not accept ten. It is up to the beekeeper and queen-breeder to determine to some extent at least which colonies it will pay him to use as cell builders, the same as it pays the breeder of swine to determine which shall be his brood sows and which shall go to market.

"It is a business sense that prompts such action. We must specialize in order to succeed best. It is quite as easy to start 100 cells and have 90 completed as it is to have only 25 completed. As it takes time to make the wax cell-cups, secure royal jelly, and graft larvae, one should endeavor to get maximum results. To use the words of David Rankin, 'Make every seed, every second, and every cent count.'"

### The Missouri Meeting at Columbia

During the year 1916, the editor attended 17 different beekeepers' meetings, besides declining a half dozen invitations, which it was utterly impossible for him to accept. He resolved to retrench for 1917. But so urgent a letter was written him by Dr. L. Haseman, Entomologist at the University of Missouri, that he broke his resolve Jan. 3, and went to Columbia.

This was Farmers' Week at the Missouri University, and some 1500 farmers had availed themselves of the opportunity to get information. The train on which the Editor reached Columbia, after 7:00 p.m., was carrying about 300 visitors. He was promptly informed that the hotels were all full, as well as the boarding houses, and that the only chance for a bed was through the efforts of the Business Club, who was directing the stranded visitors to the homes of hospitable citizens. Our Editor appears to be a lucky man, for he is always properly cared for. This time, he was given a room in the fine home of the mayor of the city, Mr. J. M. Batterton. If the hospitality he enjoyed is a sample of Missouri hospitality, that State must be put in the front rank for kindness to strangers. Reader, did you ever stop to think how many good people there are in the world, if you could only know them? The acquaintance made during this visit will not be readily forgotten.

The meeting of beekeepers was attended by only 30 to 35 persons, mostly beginners. But it was splendidly conducted by the president, E. E. Tyler, assisted by Dr. L. Haseman, Entomologist, and Messrs. A. H. Hollinger, Thos. Talbert, K. C. Sullivan and Harold Fort. Our old acquaintances, R. A. Holekamp, J. F. Diemer, Gladish, Sr., Nebel, and other experienced apiarists were in attendance.

A splendid exhibit of the "evolution of the beehive" was furnished by the managers. From the old straw skep, through the "gum," the first patented hives, the original Langstroth, the Heddon, Danzenbaker, Jumbo and lat-

est dovetailed hive, most of the modern changes were represented. A hive of bees, under a screen cage, gave opportunity for demonstrations each day. Fine honey was also shown. A very much magnified section of a worker-bee, showing all the internal organs, gave Dr. Haseman great help in his descriptions of the anatomy of the honeybee.

The spraying of fruit trees in connection with the possible poisoning of honeybees was treated by Dr. T. J. Talbert. A short synopsis of this valuable essay will be inserted in our April number. Mr. Talbert's conclusions are that if spraying is done at the proper time and with the proper mixture, there is no danger whatever for the bees.

An address by Miss Louise Stanley, instructor in Household Science, on "Uses of Honey on the Farm," urged strongly the substitution of honey for sugar in many things. Miss Stanley quoted mainly from the Farmers' Bul-

letin No. 653 of the United States Department of Agriculture, which may be had at Washington, D. C., upon request.

A most interesting essay, by a very interesting man was "Why Some Beekeepers Fail," by H. B. Parks, Biologist at Palmer College, Albany, Mo. Mr. Parks promised us a synopsis of his essay for publication.

It is out of the question to speak of all the interesting matters discussed at this meeting. The beekeepers of Missouri are to be congratulated in having such lively interest taken by the Entomological Department of their State, and they should give this work their hearty support, by attending the meetings of the Association.

On the last evening of Farmers' Week a banquet of 900 covers was given, in which the department of beekeeping had furnished honey for every table. At that banquet, the greatest need of Missouri, good roads, was emphatically discussed. The world is moving in the right direction.

## BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

### Foulbrood Experiences of a Beginner

I will tell of my experience with the little busy bees, as they have been so interesting and given me so many, many hours of pleasure; but if it had not been for our State apiarist, Prof. F. Eric Millen, my beekeeping would have been of short duration.

For several years I had wanted bees on account of the fruit; but spring after spring would pass, and still I would not have bees. Finally there appeared this advertisement in our town paper last April: "For Sale—Eight good healthy swarms of bees." I bought the bees and all the old beekeeper's paraphernalia. In a few days I learned that the bees were diseased, but the party giving the information would give no more, not even the State apiarist's name, but "closed up like a clam." I am glad he did, and I am glad I ran into this trouble at the start.

I wrote, addressing the letter to the State Inspector of Apiaries, Lansing. By return mail came a letter from Prof. Millen, saying he would be in my locality and would call in a few days, which he did, and after examining each colony said they had foulbrood, but thought, by treating, they could be saved. This he did June 10, and such a transformation in a couple of hours. They were shaken from the old hives, some of which dated back 25 years, into new double-walled hives all neatly painted, and on painted stands. A bonfire soon consumed the old hives, brood-frames, and all the old paraphernalia. Prof. Millen reduced them to six colonies, and clipped the queens wings.

The neighbors, learning that I was interested in bees, would telephone if they found a swarm, and so the season ended with 14 colonies.

On Sept. 15, Prof. Millen again examined the colonies and introduced Italian queens. At that time he ad-

vised extra feeding, which was given. The chaff trays were put on early in November; they are being wintered outdoors without any further protection, other than being in a secluded spot with buildings to the north, and buildings and a high closed fence to the west.

On Jan. 27, they were as active as on a day in the fall, and what greatly interested me was to see the little yellow bees around each entrance, which I hope proves that all queens are alive.

A. S.

### In the Eucalyptus Country

I am sending a sample of eucalyptus honey, which is just as pure as you will get, I believe. The forest is about 500 feet from the hives. It commenced to bloom in November, and was the only thing in bloom when the bees began to work, which was Jan. 3, 1916.

I am enclosing two views of my places after the box-hive time. I bought 24 8-frame hives, and found the colonies swarmed when the hives were full, so I tried 10-frame hives and supers. Now I put all the ten frames for brood-nests with all the shallow frames above early, then the 8-frame bodies later, as it is easier to lift them. I have added queen-excluders and blocks under the hives. I try to keep to 25 colonies, and bless Dr. Miller for the paper uniting plan. By blocking a part of the entrance and taking off the full and half supers they are ready for our winters.

[Mrs.] LUCY SEXTON.

Goleta, Calif.

Thanks, Mrs. Sexton, for the liberal samples of eucalyptus honey. It is indeed interesting to sample various honeys from different sections of the country. Each sample has a different taste, some mild and some strong.

This honey is amber, of excellent



body, well ripened even to stringiness, with a flavor that can be described only as eucalyptus flavor, which of course means nothing to one who has never tasted it. Those who prefer honeys of light color are not likely to approve of it; those who like the darker honeys may. In Australia, the home of the eucalyptus, the flavor is highly esteemed, and Australian beekeepers cannot understand why eucalyptus honey does not class with the best in London, where they have been anxious to establish a market for it. Some years ago a leading beekeeper of Australia brought to our place samples of several different kinds of eucalyptus honey, which varied no little. This California sample would probably rank with the best of the Australian.

Those are fine views. With everything in northern Illinois covered with snow, and the thermometer for days playing about the zero point, it takes some imagination to fancy one's self sitting under those palms. The other

picture awakens awe at the grandeur of the sight, and it would be fine to be there to work with the bees, but to live there the year around would seem a rather lonely thing, for it doesn't look as if neighbors were very plenty.

You are right in liking the newspaper plan of uniting. It is so effective, so successful, and so little trouble. Just put a sheet of common newspaper over the top-bars of one hive, set the other hive over that, and you may trust the bees to do their own uniting; first gnawing a very small hole through the paper, and uniting so gradually that there is no fighting. You can put all the brood of both stories into one story in three or four days, taking away the paper, but if you forget them for two weeks or more it will not matter. They will tear the paper all out and carry it outdoors. One thing that is no small advantage is that after the imprisonment in the upper story, the bees will not return to the old stand as they would if not thus imprisoned.

ined by the inspector or his deputies. Of these 360 colonies were found infected and ordered treated. Mr. Blaker has a very efficient system of records by loose leaf cards, which aids in checking the spread of disease.

Through cooperation with the Division of Bee Culture at the Agricultural College, efforts are being made to permanently keep free from disease apiaries within reach of the University Farm beekeeping region.

**Food for the Child.**—"The Rural School Lunch" is the title of a 24-page bulletin gotten out by the Domestic Science Department of the University of Illinois. The booklet contains much of interest to the parents of school children.

One item, mentioning honey, is worthy of notice. It is as follows: "When we understand what is essential and vital for the growth and health of a child, it yet remains for us to know what foods will furnish these essentials."

"If an average boy were offered his choice between a lunch of bread and honey or one of bread and milk, he would, without doubt, choose the former—there is no question but the former would more completely supply the complex demands of a growing boy or girl."

**Accident Insurance for Beekeepers.**—The Société Romande d'Apiculture, in Switzerland, supplies its members with a monthly magazine, a library of books on bees, lectures, meetings, and an insurance against accidents. Here is what one of its members had to say, in the November, 1916, "Bulletin" concerning losses:

This season, I undertook the transportation of my bees to the mountain. Along the road, an accident happened; four hives were upset and opened. The driver was stung to such extent that he was incapacitated for a week, and his horses were stung so severely that one of them died within 24 hours and the other was hardly well after two months. It had cost \$240 before the accident, and sold for only \$160 afterwards.

The Winthertour Insurance Company having a contract with our association, paid the damages, \$380 for the lost horse and for decrease of value of the other; \$102 for treatment of the other saved horse, repairs of harness, carriage, loss of time, etc., a total of \$482.

This incident is a sufficient evidence of the usefulness of our association, to which we must remain faithful. It was my fourth year of bee transportation and the second year with the same drayman. We might have said: Nothing ever happens. But something did happen this time.

J. TALLANT,  
*Swiss Bulletin D'Apiculture.*

**Honey on the Farm.**—A recent bulletin of the United States Department of Agriculture is devoted to an analysis

## MISCELLANEOUS



## NEWS ITEMS

**Government Bulletin on North Carolina Beekeeping.**—"A Survey of Beekeeping in North Carolina," is the title of a 16-page government bulletin written by E. G. Carr, of New Jersey, who made a survey of conditions in that State from Oct. 1 to Dec. 22, 1915 under Dr. Phillips' Bureau of Bee Investigations at Washington. Unfortunately Mr. Carr's survey covered only a portion of the State.

North Carolina ranks fourth among the States for number of colonies with a total by the census of 189,178 colonies. She ranks eleventh in value of bee-products (\$230,586). A large proportion of the bees are German or black bees, and are kept in log hives or gums, which are either placed on log benches or flat rocks. Most gums are kept in thick shade for fear of melting combs, much of which could be averted by better ventilation.

Swarming is uncontrolled generally, resulting in reduced crops, and in much loss from wax-moths which have a longer season in which to exterminate many of the weaker colonies of black bees.

Fortunately, foulbrood (American only) is found in only a few counties, and to a limited extent. Its ravages in box-hives, unexamined, might be tremendous. Sacbrood and paralysis are also found, though to what extent is not known since very few beekeepers have movable-comb hives, and an examination of colonies is infrequent.

Winter protection for bees is practically unknown, although it might be practiced to advantage. The crops

average probably from 40 to 80 pounds per colony, depending upon the season and on the kind of honey secured. Comb, extracted, bulk comb, chunk and "strained" honey are produced. Beeswax is rendered from box-hives, but only in a crude way, a large proportion of the wax being lost. There are three commercial queen-breeders in the State.

The honey-flora of North Carolina is abundant, some of the main producers being sourwood, linden, poplar, the clovers, gallberry, black and tupelo gum, etc. Honeydew is also abundant occasionally.

In summing up the situation Mr. Carr says:

"North Carolina has a large number of bees. The pollen and nectar producing flora are abundant, and the honey, when properly produced, is high grade. There is a good market in the State for honey, and many more bees could be profitably kept. The beekeepers of North Carolina are now in proper attitude to accept and make the best use of information which will enable them to secure good profits from bees."

Copies of this booklet may be obtained by addressing a request for Bulletin No. 489, United States Department of Agriculture, Washington, D. C.

**Minnesota Inspector's Report.**—The 1916 report of the State Inspector of Apiaries for Minnesota is just out. Interested parties may get copies by addressing the inspector, Mr. D. C. Blaker, 4420 Grimes Ave., Minneapolis. A total of 8519 colonies were exam-

of food consumed on the farm, how much per family and per person, and how much of this food is produced at home, how much purchased.

The survey covered a total of 950 families in 14 different States. The States were Vermont, Maine, New York, Pennsylvania, New Jersey, North Carolina, Georgia, Texas, Ohio, Iowa, Wisconsin, Kansas, North Dakota and California.

The four leading States in consumption per capita were North Dakota 3.2 pounds, Texas 2.8 pounds, New York 2.7 pounds, and Wisconsin 2 pounds. Those consuming the least were Vermont with .2 pound, New Jersey .3 pound, Pennsylvania .4 pound, and California .7 pound.

About 57 percent of the honey used on these farms was home produced, the balance was bought.

If these figures argue for anything,



MRS. SEXTON'S APIARY IN CALIFORNIA

it is for the development of home markets by the average beekeeper. We have been, for years, expecting the big cities to use our surplus honey, when in fact many of us might profitably have exerted more effort in seeing that our farmer friends had enough honey to supply them. A little over three pounds as the annual consumption of a person is little enough, especially when compared to 80 pounds and more of sugar. Can we not quadruple this consumption by well directed efforts?

**A Peculiar Accident.**—The Nucla Independent (Colorado) records in one of its recent numbers a very sad and peculiar accident causing the death of Mr. F. W. Huntley, a large and well known beekeeper of that section.

Mr. Huntley was accompanying several loads of honey to the railroad station of his nearest town. While going up a steep hill, both teams broke loose from their load, the wagon backing down and over Mr. Huntley, who was in the rear of the loaded wagon. Death was instantaneous.

**Southern Minnesota Meeting.**—The annual convention of the Southeastern Minnesota and Western Wisconsin Beekeepers' Association will be held at Winona, Minn., in the Court House on Feb. 27 and 28.

O. S. HOLLAND, Sec.

**Pennsylvania Convention.**—The annual meeting of the Pennsylvania State Beekeepers' Association will be held in the Capitol Building, Harrisburg, March 2 and 3. An interesting program is in preparation.

H. C. KLINGER, Sec.-Treas.

**The National Meeting.**—The annual meeting of the National Beekeepers' Association will be held at the State Capitol at Madison, Wis., on Feb. 6, 7, and 8. The address of welcome is to be given by N. E. France, for many years General Manager of the association.

The following men have been invited to address the meeting, and a large majority of them will be in attendance:

Dr. C. C. Miller, Dr. E. F. Phillips, E. R. Root, C. P. Dadant, Morley Pettit, Dr. S. A. Jones, Geo. W. Williams, Dr. L. C. Leonard, Dr. W. M. Copenhaver, Frank C. Pellett, Prof. F. Eric Millen, E. D. Townsend, Wesley Foster, E. S. Miller, Hamlin B. Miller, Louis H. Scholl, J. D. Bixby, E. J. Baxter, Rev. Francis Jager.

The topics which will be touched upon by the speakers are such as are of especial importance to the beekeeping

fraternity, and are such subjects as will have to be taken up by the National to make it of most value. They are as follows:

State and government aid for beekeeping industry.

Educational, research, and extension work.

Production and overproduction of honey.

Comb and extracted honey.

National bee census.

State fairs and exhibits.

Honey and commerce.

Competitors and enemies of honey industry.

Standards of grading, packing, shipping, and others.

Advertising and increasing consumption of honey.

Containers.

Freight and express, imports and exports.

Honey statistics, quotations, distribution of reports.

Supply and demand, the "bear" and "bull" in the honey market.

Efficient protective system for American beekeepers.

Necessity of a National central office.

Plans and policies to make the National a powerful agency for success.

### A BETTER COMBINATION

When one neighbor raises flowers,  
And another chickens,  
Oft they fight like irate powers,  
Daily raise the dickens.

Neighbors ought to strive to please,  
Folks should not be scrappy.  
Better make it flowers and bees  
And be truly happy.

—Louisville Journal.

**California Meeting.**—California's State Beekeepers' Association will meet in the Exposition Hall of the State Exposition Park in Los Angeles Feb. 16 and 17. There should be a large attendance



DISTANT VIEW OF A BEE RANCH IN SAN MARCOS PASS, SANTA BARBARA, CALIF.



## DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to  
DR. C. C. MILLER, MARENGO, IL.  
He does NOT answer bee-keeping questions by mail.

### Keeping Down Swarming and Getting a Good Crop

What do you think of this plan for getting extracted honey and keeping down swarming? We will suppose that we have the hives well shaded and plenty of ventilation and well supplied with supers, but once in a while one will swarm. Now suppose you remove the hive and all surplus supers to one side and hive the swarm in a new hive with frames of foundation except one that would contain a little brood and eggs; this frame would be taken from the hive that swarmed.

Now set this new swarm on the old stand, then place a queen-excluder on the hive, then put all of the supers back on the hive, then shake all of the bees that were left in the old hive in front of this new hive and let them go in; then place the old hive containing the brood on top of all the supers, and in seven or eight days look to see if any queen-cells are started; if there is cut them out and keep right on putting on supers until the honey flow is over; then in the fall of the year double all the swarms up by putting one hive on top of the other. When they are all united take the top hive off and see that the hive left to the bees has plenty of honey for winter. I have had to winter my bees outdoors which I do not like, as I have never been very successful.

MINNESOTA.

ANSWER.—Your story reads all straight until you say to cut out any cells that may be found seven or eight days after swarming. You should have cut out cells on the day of swarming, and then for the next cutting I'd rather wait eight or nine days more.

You say, "Then in the fall of the year double up all the swarms by putting one hive on top of the other." That sounds a little as if you meant to unite two different colonies. I hardly think you mean that, but merely to set over the lower story that at the time of swarming was put above with brood in it. But in the fall there will be no brood in it. Within three weeks after swarming all the worker-brood will have emerged, and in the fall it will be a story filled with honey, provided the flow is good.

Your plan on the whole is excellent, and has been used a good deal.

### Giving Queen Room for Early Laying

I have six colonies of bees in 10-frame hives. I fed them late last fall just as much as they would store away in their combs. I am wintering them in a cellar, but before I put them into the cellar I weighed them and they weighed from 65 to 75 pounds each. Will the queen have enough room in early spring to lay?

MINNESOTA.

ANSWER.—There is very little danger that the queen will not have enough room, but if there should be any trouble in that way just take out one of the outer frames of honey and put in its place an empty comb, placing it outside the brood-nest, but next to the brood.

### Feeding a Weak Colony in the Winter

Last fall I got two colonies of bees. They were robbed and left weak. How is the best way to feed them so they will go through the winter all right? I do not have any comb honey but have some extracted.

NEBRASKA.

ANSWER.—You can lay sections on top of the top-bars, cover over with cloths, and leave the bees to themselves. You can feed the extracted honey. Put it in friction-top honey pails having a lot of holes punched through the covers with a wire-nail. Have

the honey as hot as your finger will bear, but be sure not to scorch it. It will be better to have more than one pail, so that the bees will not be long in carrying the honey all down. Just set the pails upside down on the frames, and then cover up with cloths. It may be worth while to warm up the cellar to 50 or 60 degrees. If you are not sure that the honey is free from disease, you can feed sugar syrup in the pails. Heat the water, and while it is on the stove sprinkle the sugar into it, keeping it stirred until well dissolved. For each part of water, either pint or pound, use 2 or 2½ parts of sugar. Use granulated sugar.

### Increasing—Requeening

1. How early would you advise me to start increase as I want the colony to build up strong before fall?
2. Would you advise rearing queens from brood or buying queens? I have some good stock.
3. If I buy should I buy virgins, untested or tested queens?
4. If the queen is clipped and a swarm comes out is it necessary to settle them or will they return to the new hive which has been placed on the old stand?
5. If I start queen cells in a strong colony (made queenless), then give the cells to a r-frame nucleus would they finish them all right?

KENTUCKY.

ANSWERS.—1. One of the surest ways to spoil your chances for good increase is to divide your colonies too early. A point of chief importance is to have colonies first build up strong, and even then better not do any increasing before about the time for natural swarming, or at least a little before that.

2. That depends. If you want to keep down expenses, don't feel in a hurry, rear your own queens. If you care more for increase than for the expense, buy queens from farther south, unless you can get them early enough nearer.

3. Like enough untested may be advisable.

4. They will return of themselves, although sometimes a swarm will cluster on a tree and remain some time before going back to the hive.

5. Yes; but you better leave the cells as long as you can safely in the strong colony. You can leave them safely in the strong colony until ten days after taking away the queen, provided no queen-cells were started before the queen was taken away.

### Sour Honey

I had some dark honey gathered this fall from buckwheat, aster, and some other wild flowers and it was quite thick. After extracting I put it into 10-pound pails. One of these pails fermented and soured. What was the cause? There was no water or moisture in the pail, and the honey was kept in a warm place after extracting.

MINNESOTA.

ANSWER.—Without knowing more about the case I could not speak positively, but my guess would be that the honey was not well enough ripened, and so began to sour.

### Believe My Bees Were Poisoned By Spraying

My bees were wintered in a cellar in 1½ and 2 story hives. On May 1 the bees were very strong with plenty of stores. We had

no bee disease. I have my bees in a large orchard, and by the time the spraying was done, June 10, my bees were so depleted that they were killing and dragging out the drones. They built up afterwards; no colonies were lost.

The trees were not sprayed while in bloom, but there was a heavy underbloom of dandelion, and at the last spraying there was much white clover in bloom; there were 3 sprayings. The workers seemed to go to the field and fail to get back. I got the same dose in 1911, but in 1915 there was little underbloom and the loss of bees was not noticed.

The brood looked healthy, and not many dead bees in front of the hives other than drone larvae and drones.

IOWA.

ANSWER.—It looks pretty certain that the bees were poisoned by the spray that fell on the dandelion and clover. In States where there is a law against spraying trees while in bloom, there seems nothing to reach the case, and there is nothing for the beekeeper but to grin and bear it. The only law that would be of use would be one forbidding all spraying at any time, and such a law would do more harm than good.

### Getting Swarms from Bee-Trees—Baiting for Swarms

1. In May and June there are a number of runaway swarms that go flying across the country. How can I capture them or induce them to settle?
2. Often they have taken up their abode in some hollow tree. How could I use a bee-escape to capture them, letting them escape into a tight box, taking the box home and giving them a queen?
3. How can I put up a box in the woods and let them hunt it up and go into it of their own accord?

KANSAS.

ANSWERS.—1. If you get ahead of them and throw a heavy spray of water upon them you may possibly get them to settle. Some say use a mirror and throw the reflection of the sun upon them. Others say shoot small shot or sand from a shot gun into them.

2. There is no great difficulty in getting all the workers that fly about by having an escape through which they can pass, with all other exits closed, but the trouble is to get the queen and the younger bees, which are quite satisfied to remain. Possibly you may drive them out by throwing in enough smoke, carbolic acid, or something of the kind. If you can get them out in that way without any escape, then you can quickly close up all chance for them to return.

3. The usual way is put the hive in the crotch of a tree, but it may do as well placed on the ground. One or more empty brood-combs may help, but the moth is likely to get them if they stay long.

### Kind of Sections—Artificial Shade

1. Are untested queens fertilized?
2. Which sections are the best to use, plain or beeway?
3. What is the best plan for shade if you have no trees?

MISSOURI.

ANSWERS.—1. Yes. If unfertilized they are sold as virgins.

2. Personally I prefer the beeway, and I think the great majority agree with me.

3. Vines may be quickly grown. You may have a shade-roof of shingles or any cheap material, allowing it to project on the south side, weighted down with stones. A satisfactory way is to take an armful of hay or straw—better long grass freshly cut—and pile it on top of the hive, weighting it down with two or three billets of firewood.

### Honey and Sugar Compared

1. A man who owns a large number of bees gave up a piece of ground he had been renting and accidentally left a few hives on the place. A new beekeeper rented the ground and put his bees on the place. He found the boxes left there by the former beekeeper and cleaned them out and set them in a pile.



A few days later a swarm of bees was found in the boxes. The renter took care of the bees and built them up. Some time later he casually let drop a remark to the former renter, telling him of his boxes and that he could have them as soon as the bees were transferred. The former renter claimed both the bees and the boxes. To whom do the bees legally belong?

How sweet is honey? Some say it is twice as sweet as sugar. Is this not a mistake?

MINNESOTA,

ANSWERS.—I. I am not a lawyer, but I'll tell you how the thing looks to me. Call the first renter A, and the second B. If A had taken away all his hives when he left the place, and B had caught the swarm in his own hive, there would hardly be any question as to B being the owner of the swarm. The only difference in the actual case is that A's hive was used for a time, and A might claim rent for the hive during the time the swarm was in it. Also B might claim rent for the ground occupied by A's hives.

2. I have made considerable effort to learn just how honey compares with sugar as to sweetness, but never succeeded. Something was given in that direction by the authorities at Washington, D. C., but if I remember correctly it was not definite. But I think a pound of honey will do no more sweetening than a pound of sugar, if as much.

### Miscellaneous

1. Would it not be a good thing for the National Beekeepers' Association to have a warehouse where beekeepers could send their product, such as honey, beeswax, etc., to be sold. Also where they could buy supplies say about 5 percent above cost? The warehouse should be centrally located near water and railroad, so as to reduce the cost of sending.

2. How much do bee papers pay for a word or line for articles?

3. When sending bees from the South to the North in early spring, say about April 1, why not get a comb of pollen and put it in a strong colony? There are train loads of pollen going to waste every spring in the foothills in northern California.

OBSERVER.

ANSWERS.—I. Yes, something of this kind has been discussed many times, but nothing has ever come of it. Possibly something may yet.

2. I don't know; generally, I think, they have more than they can publish without paying anything, but some writers are paid at varying prices.

3. Apparently you think the lack of pollen in the North is responsible for the lack of bees. There's plenty of pollen here.

### Wintering in a Dry Cellar

1. I wish to winter my bees in the cellar, which is very dry, and holds temperature from 40 to 45 degrees. Do you advise removing the covers and raising the hives in front of those that are on shallow bottom-boards?

2. The cellar is large, but the part I want to put them in is 10x15 feet. How many can I put in that space for best results?

3. One of my colonies cast a swarm and a virgin queen accompanied the swarm along with the old queen. Was that unusual?

ILLINOIS.

ANSWERS.—I. If you raise the hives in front it will be hardly necessary to remove the covers.

2. If the air in the cellar is not changed too slowly, 125 to 150 colonies ought to do well in it. Instead of having the temperature 40 to 45 degrees, it would be better to have it 40 to 50 degrees.

3. Yes, it is quite unusual.

### Stamping Section Boxes

Do you know a way of printing honey section boxes without the stamping-ink running together?

ILLINOIS.

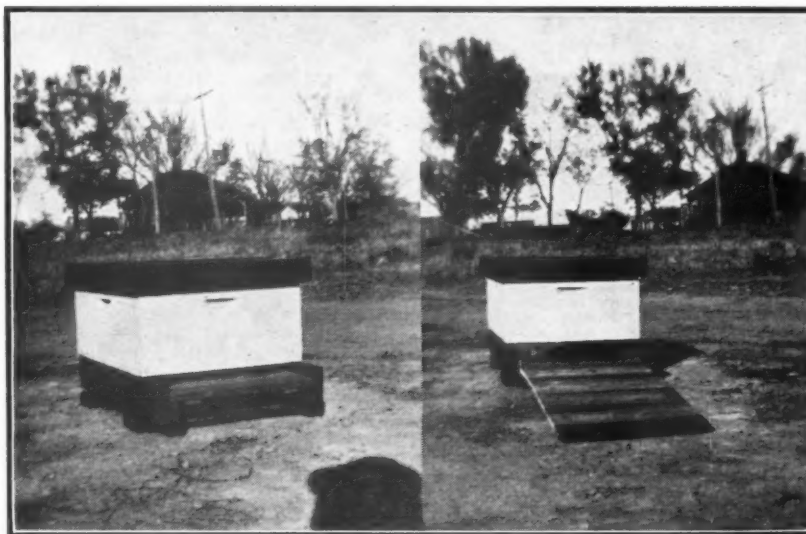
ANSWER.—Any good stamping-ink or printing-ink ought to work all right. It requires

a little practice not to have your stamp too wet with ink nor too dry. When you strike your stamp upon the ink-pad, if it is too wet with ink, have a piece of cloth upon which to strike your stamp once or more so there will not be enough ink on the section to run together. Then you may be able to stamp several sections before the impression upon the section is too faint, when you must strike your stamp again upon the pad. A good deal depends upon having the ink-pad just wet enough. If you have it just right, neither too much nor too little ink upon it, you may be able to work straight along striking pad and section alternately.

### New Hive Stand and Bottom-Board

Attached are photographs of a hive stand and bottom-board combined. I would like to have you pass judgment on it. The left hand hive shows the hive on the stand with bottom-board in place.

The hive on the right shown is on its stand



A COMBINATION BOTTOM-BOARD WHICH CAN BE SLID TO THE FRONT

with bottom-board drawn out, which makes it easy to clean. It slides in grooves on the hive stand, and when in place it is bee tight at the back, but by sliding it back a little it will give ventilation when needed.

KANSAS.

ANSWER.—Beekeepers are an inventive lot, and many a one invents something that he likes, and yet other beekeepers do not care for. I am a little afraid your invention is one of that sort. If you leave the movable board drawn out in harvest, the bees will build down. Drawing it out makes it convenient, as you say, for cleaning, but you can have that advantage more easily and cheaply by following the plan more in use in Europe than in this country, which is to slip in a piece of pasteboard or roofing paper.

### Cellar Wintering

I have been having trouble with cellar wintering. My cellar is about 15 feet square, cemented on the bottom and sides. I have a coal stove in a small room adjoining with a 4-inch thimble opening into the bee-room for ventilation upward, also three 3 inch tin conductor tubes coming through the walls and extending nearly to the floor on two sides of the room.

Two years ago I had about 60 hives in this cellar with the front ends of the hives raised two or three inches by an entrance block. I had no fire and left all ventilators open. I lost 13 or 14 colonies.

A year ago I had about the same number and left them out in order to let them get a late flight, but the weather turned quite

cold and I had to take them in without the flight. The hives were full of frost so I raised the front ends of one-half of the hives, and the duck-cloth on the front ends of the rest. I kept a coal fire a while to dry out the frost, and in the coldest weather when the thermometer went down near 40 degrees in the room. They seemed to be doing well until about the middle of the winter, when they began coming out and dropping on the floor and dying. I lost 24 colonies last year and the remainder were about one-half strong and the rest quite weak.

What was the trouble? A good many of the combs were moldy, and some of the colonies seemed to have diarrhea and others not. The room is banked up as high as the walls with straw about a foot thick. I think putting them in with frost in the hives is responsible for some of the trouble, but not all.

This year they had a good flight on Dec. 9, and were carried in two days later in good condition. I now have only 47 left. I have not raised any hives or duck covering yet, and would be glad to have you advise me. Do you think the 6-inch outlet in the chimney about three feet below the ceiling was too large or the 3-inch intake pipes too many? I kept one and sometimes two

closed in the coldest weather with a coal fire burning slowly in the back room and the door open between.

NEW YORK.

ANSWER.—Without any fire, the likelihood is that your cellar was too cold two years ago. A year ago you say you took them in after they had endured more or less confinement without a fly, and no doubt their intestines were somewhat distended when taken in, and that was worse than if they had been confined in the cellar for a longer time. The moldiness of the combs seems to indicate lack of ventilation, and your closing part of the ventilation in the coldest weather may have made matters worse.

You seem to have made a good start for this winter, and I would advise that you keep up abundant ventilation, both of the hives and the cellar, and then try to keep the temperature up to about 50 degrees. There is, however, a good deal of variation in thermometers, and you should try to find out whether your thermometer marks 50 degrees when the temperature is really only 40 or 45.

### Transferring—Extracted Honey—Number of Colonies in United States, Etc.

1. In transferring bees from box-hives to movable-frame hives, it is explained in the Bee Primer that you must lift the body from the bottom board and set it upside down and then place the forcing box on the hive, etc. Now suppose your box-hive has the bottom nailed to the hive-body, so you can't invert it. Could I not take the cove

off of the box-hive and place the forcing-box on top of the hive instead of on the bottom and then pound the hive, and would the bees not cluster in the forcing-box just the same?

2. In working for extracted honey is it best to put a super with combs in on the hive as soon as the bees begin to bring in pollen in the spring, or is it better to wait until the flow is on and they have stored some in the brood chamber? Will the queen lay brood in these frames if put on early? If she starts to lay in them in the spring will she lay in them all summer?

3. Last fall when I had extracted I put the combs back on to be cleaned, but there was still a little honey coming in from the fields so they stored a little in the frames (not enough to cap). Will they work in these in the spring as well as in empty ones?

4. If the queen lays eggs and brood hatches in extracting combs and then the bees store honey in them afterwards, will this honey, when extracted, be darker than that from combs in which no brood has been reared? Will there be any difference in the quality (taste)? How can the queen be prevented from laying in the supers without an excluder?

5. If honey is extracted about the middle of July will it keep until the last of September in open tanks or barrels? The thermometer sometimes reaches 100 degrees and over in July and August. How long will good honey keep in bottles or jars? Will it granulate when bottled?

6. About how many colonies of bees are there in the United States? In Nebraska?

7. Early in the spring before there is any field work for the bees, if you feed the bees small amounts daily, will the queen begin laying?

8. Please explain the best method of uniting two weak colonies. Would the two store more honey united than separate? Would they be liable to swarm?

9. In wintering bees I have read one should make a frame of screen to lay on the frames and then the mat or other absorber on top of this so the bees can move freely, from one frame to the other. Can't they move just as well from the bottom? How do they get from one frame to the other if the mat or absorber is laid directly on the frames?

10. In requeening should the old queen be killed before the new one is introduced?

11. Is there any way to make a home-made bee-escape that is cheap and practical? Should the bee-escape be put on the day before the super is to be taken off or can you get the bees out of the super the same day?

12. Is there enough honey produced in the United States to supply the demand or is there place for more beekeepers?

#### NEBRASKA.

ANSWERS.—1. Generally a box-hive has the top nailed on and the bottom not nailed; hence the instruction to invert. If the top can be lifted off, then there is no need to invert, whether the bottom be tight or loose.

2. It is not best to put the extracting-super on before it is needed, as it makes just so much more room to be kept warm when all the heat is needed below to keep the brood warm. The queen is likely to lay in the second story, and to continue it. However, if the brood-chamber be small, it may be a desirable thing to have the queen lay in the second story at least until the harvest.

3. The bees will work just as well—possibly better—with some honey in the extracting-combs, but that honey that is left over winter in the combs is pretty certain to be candied, and to hasten granulation in the honey that is freshly stored.

4. It is generally considered that honey stored in combs which have been used for brood-rearing is just as good as any in color and taste; but some think there is a little difference. It is a difficult thing to prevent the queen from laying in the upper story without using an excluder, although I think she is less likely to go up if the extracting-combs be shallow. Perhaps Editor Dadant will tell us about that. I think E. D. Townsend keeps the queen down by having full combs of honey in the story next the brood-chamber, adding additional stories above this story instead of under.

5. There is a big difference in honey as to the tendency to granulation. Some will granulate within a week or two, while some

will keep liquid a year. I should expect that your honey, if thoroughly ripened, might remain liquid until the last of September; yet it might not. Bottled honey may keep good 10 years or more, but will generally granulate unless heated to above 130 degrees and sealed.

6. The 1910 census gives about 35,000,000 colonies for the United States, and 46,000 colonies for Nebraska. This counts only bees on frames and does not list those in cities.

7. Yes, if you were in a place where there was an utter dearth of bee-pasturage, with warm weather, you could get the queen to lay by feeding. In your region you probably cannot make a day's difference in the time she begins.

8. Very early in the season you can generally unite by merely lifting the combs with adhering bees out of one hive and setting them in the other. At other times put a sheet of newspaper over the top bars of one hive and set the other hive over it. The bees will tear away the paper and unite of their own accord, and in four or five days you can move the occupied combs from the one story into the other. The united colony may store more and it may store less than the two separate colonies—depends upon whether they are too weak to be built up for the harvest. The united colony will be more likely to swarm than one of equal strength not united.

9. No; in cold weather they can move from one to another over the top, where it is warm, more readily than under the bottom, where it is cold. If a mat is laid flat upon the top-bars, a little stick, or something of the kind should be under the mat to afford a passage under it.

10. Yes; although the new queen may be caged in the hive a day or more before the old one is killed.

11. Possibly you might make a cone-escape with wire-cloth. Generally you will not get the bees all out before the next day. [Page 108, June, 1915, J. E. Crane gave the description of a home made bee-escape, cheap and practical. A solid honey-board is placed under the super and the bees come out at the end of this board in the manner shown in the illustration.—EDITOR.]

12. The demand is so little that many beekeepers feel they do not get enough for their honey. Yet it would be for the good of the nation if ten times as much honey were consumed as is now produced, and if the people were sufficiently informed as to the value of honey, that amount might easily be consumed.

#### Queen-Excluder—Hybrid Bees—Salt for Bees—Basswood Trees—Honey-House—Bee-Cellar

1. I purchased ten wood and wire queen-excluders, and as my bees are all of the black strain the queens go through. I will need some more bees. Would you advise me to get the same kind or what would you do?

2. Could you tell me of a good reliable place to buy queens without paying too big a price?

3. How long does it take a man to get immune to bee-stings, being stung two or three times daily, and when immune will it last from fall until spring?

4. Would it pay to run an outyard with only 20 or 25 colonies at home and about that many at the outyard? I have an auto and can find a good location about three or four miles from home.

5. A neighbor beekeeper tells me that a hybrid bee is more cross than a pure Italian or a pure black. Is this so?

6. Will it injure honey to let it stand in a galvanized tank? If so, what can be done with it?

7. Would taking whisky be any help to a person when real sick from bee stings?

8. What is the reason bees work so much on salt? Would it pay to leave salt some place for them?

9. How many basswood trees for each col-

ony would you want before you would consider it a fairly good place for an outyard with white clover on the side?

10. What does it cost to join the Beekeepers' Association, and who do you see about it?

11. If I build a honey house with a cellar under it for my bees, would carpenter work in this house bother the bees in winter?

#### IOWA.

ANSWERS.—1. If the queen-excluders are all right, neither black nor Italian queens should go through. Other things being equal I suppose the wires are preferable to the stamped zinc, but I surely wouldn't want those that would let queens through.

2. I must refer you to the advertising columns of the Bee Journal. I think any of those advertising will furnish good queens, and you can compare prices yourself.

3. I don't know very definitely, but I suppose that in such a case a man might become immune to a good extent in two or three months, and I think the immunity should last through the winter. But if you mean by "immune" that a bee-sting doesn't hurt at all, then I think there are very few that ever become really immune. I have been at it for more than 50 years, and a bee-sting hurts me like sixty now. But the hurt doesn't last very long, and it swells very little.

4. That depends on the location. It would be a very poor location that would not support 40 colonies. If the location is fairly good it will hardly be advisable to start an outapiary until you have more than 75 or 100 colonies.

5. It is very often so.

6. I hardly think it will do any harm for the few days it should remain in the tank before being put in permanent containers.

7. It would likely do more harm than good.

8. I don't know, but I suppose the salt supplies some need, and as they seem to care for it it might be well to give it to them.

9. I don't know. I have seen it estimated that one tree was enough for a colony, but I don't know how correct that is.

10. If you cannot join through some local association near home, you can join directly by sending \$1.50 to the secretary, Prof. F. Eric Millen, Ames, Iowa.

11. With only a single-board floor over the cellar and with much heavy pounding, I should be afraid of results. With a double floor and something to act as a deadener a little pounding would hardly do much harm.

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April, May, June queens warranted purely mated, \$1.00 each; six for \$5.00; per doz., \$9.00. Bees per lb., \$1.25. With untested queen, \$2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

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No. 1 white comb, \$3.50 per case; No. 2, \$3.00. No. 1 fall comb, \$3.00; No. 2, \$2.50; 24 sections to case. In six case lots 10 percent discount.  
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Dadant & Sons, Hamilton, Ill.

### SUPPLIES.

**WANTED**—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

**THE PERFECT Bee Frame Lifter**. For descriptive circular address.  
Ferd C. Ross, Box 104, Onawa, Iowa.

**How to double** your honey production at a small cost. Send 2c stamp for information.  
W. M. Budlong, 1523 14th Ave., Rockford, Ill.

**FOR SALE**—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.  
A. E. Burdick, Sunnyside, Wash.

**BEE-KEEPER**, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.  
White Mfg. Co.,  
4Atf Paris, Tex.

**GOOD** second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f. o. b. Cincinnati.  
C. H. W. Weber & Co.,  
2146-48 Central Ave., Cincinnati, Ohio.

**WANTED**—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address.  
American Bee Journal, Hamilton, Ill.

**FOR SALE**—50 new 10-frame hives with metal covers complete with frames nailed and wired at \$1.75 each; in lots of 25 or more at \$1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each.  
M. C. Silsbee Co.,  
P. O. Cohocton, R. F. D. 3, Haskinsville, N. Y.

"DAD" Townsend and his two sons are simply honey producers, the same as most of you are, nothing more. The boys produce the honey and "Dad" will tell you how they do it from month to month in "The Domestic Beekeeper." Send 25c in stamps and read "The Domestic Beekeeper" the first half of 1917 and see how the crop is produced. Address, "The Domestic Beekeeper," Northstar, Michigan.

### SITUATIONS.

**WORK** wanted in apiary in southwest States; some experience as beekeeper.  
Mrs. O. A. Peterson, Rt. 8, Owatonna, Minn.



**WANTED**—Beekeeper familiar with Rocky Mountain conditions to handle bees on shares. Can make good offer. Write stating age, experience, etc.  
A. H. Dunn, Fort Collins, Colo.

**WANTED**—Man of more or less experience to help in comb and extracted honey production in northern Illinois. Address:  
Bruner's Bees,  
3836 N. Kostner Ave., Chicago, Ill.

**THE 25c OFFER** for the "Domestic Beekeeper" for the first half of 1917 is for new subscribers only as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address: "The Domestic Beekeeper," Northstar, Michigan.

**WANTED**—A good bee-man for 1917; also an assistant. Must be reliable men. State wages, and give references.  
W. J. Stahmann, Clint, El Paso Co., Tex.

**WANTED**—Queen-breeder to take up proposition to supply our members with queens. Location and equipment furnished. About 3000 queens used in 1916.  
Idaho Oregon Honey Producers' Ass'n.,  
New Plymouth, Idaho.

**WANTED**—Reliable farm raised man of good habits, who has had some experience with bees, as helper with bees, etc., season 1917. Large apiaries. Steady employment to right party. Give age, experience and wages wanted first letter.  
Frank Kittinger, Franksville, Wis.

**WANTED**—A position in a large apiary. Understand both comb and extracted honey productions, and can assist in queen rearing, as I understand the business. Would prefer position in the southern States. Address,  
J. R., Care of American Bee Journal,  
Hamilton, Ill.

**ARE YOU** a member of the National Beekeepers' Association? If not, you should be. The dues are \$1.50 each year, which includes a year's subscription to the official organ of "The Domestic Beekeeper." "Dad" Townsend, the owner and publisher of "The Domestic Beekeeper," has secured more members (ask the secretary) for the National than any one else, and perhaps as many as all others combined, and wants to add another thousand members this winter. Will you be the next? We hope so, for it is with great pleasure that we are able to send in a nice list of members each week. Mail the \$1.50 today. "The Domestic Beekeeper," Northstar, Michigan.

### HONEY LABELS

**HONEY LABELS** of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.  
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

### MISCELLANEOUS

**25 LADIES' COOTS**, bird dogs, wild ducks for sale or exchange for bees.  
A. J. Graves, Ocheyedan, Iowa.

**50 ACRES** of bottom land in central Oklahoma for trade or sale. Fine location for apiary. Close to oil wells.  
L. Benson, Gillette, Wyo.

**MARKET** prices paid for junk, rags, burlap, carpet, rubber, rope, paper, books, copper, brass, all metals, scrap iron, raw furs in large or small lots. Send for list.  
Chas. G. Bolton, Zieglerville, Pa.

**THE** very best bargain you can get for 25c worth of stamps is "The Domestic Beekeeper" for the first half of 1917. Address "The Domestic Beekeeper" (successor to the Review) Northstar, Michigan.

### WANTED

**QUEEN EXCLUDERS** wanted for 10-frame hives.  
Otto Bender,  
Rt. 10, Jefferson Barracks, Mo.

**TRADE**—Safety writing desk, \$75 rifle for bees.  
A. J. Graves, Ocheyedan, Iowa.

**WANTED**—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.  
Dadant & Sons, Hamilton, Ill.

**WANTED**—Bees to run on shares by experienced man. Am familiar with conditions in the western States. Address,  
E. Zion, Goldroad, Ariz.

**WILL** exchange \$18 incubator for reversible extractor, or pay cash. Write  
Lorenzo Clarke, Winona, Minn.

**WANTED**—To exchange six Vols. History of the World for bee-books.  
E. E. Nelson, Rt. 2, Renville, Minn.

**WANTED**—Four frame hand-power automatic extractor; ball-bearing, slip-gear, comb pockets 12 inches. Must be guaranteed.  
W. F. Byers, Monroe, Iowa.

**THERE** will be big things doing this year along the line of establishing a uniform selling price for honey, both at retail and at wholesale. "The Domestic Beekeeper" will be headquarters for information upon this subject. Send 25c in stamps for six months' subscription to the "Domestic Beekeeper," and keep posted on the most important subject confronting the honey producer today. Do it now. Address "The Domestic Beekeeper," Northstar, Michigan.

### POULTRY

**WHITE** and buff Wyandotte and dark Cornish eggs for hatching from heavy laying and prize winning stock. Get my catalog; "it's free." Am booking orders now.  
Joseph Cox, Valencia, Pa.

**LUCERNE LAWSN LEGHORNS LAY**—Because they are bred that way. Large, thrifty, vigorous, farm range raised Single Comb White Leghorns will fill your egg baskets in the winter when your bees are resting and eggs are high. Safe delivery and fertility guaranteed. References any bank or banker in Piatt county. Get a start with fifteen eggs prepaid any address in United States, \$3.25.  
Lucerne Lawns Farm, Paul D. Cooper,  
Rural Route 3, Hammond, Illinois.

### FOR SALE

**FOR SALE**—200 comb-honey supers, standard eight and ten frame size, painted, 50 and 40 cents. Write  
Chester Keister,  
Rt. 1, Clarno, Wyo.

**QUEENS ON APPROVAL**—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.  
A. M. Applegate, Reynoldsville, Pa.

**FOR SALE**—Well established retail honey business in one of the largest industrial centers of the world. Reason for selling is my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910.  
John C. Bull,  
811 So. Hohman St., Hammond, Indiana.  
Phone 1023 J.

**BEGINNING** with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the first half of 1917 for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Domestic Beekeeper," Northstar, Mich., and "The Domestic Beekeeper" will come to you regularly for six months.

**SWEET CLOVER SEED**—We have on hand several hundred pounds of hulled white sweet clover seed which has weed seeds mixed with it.

While the percentage of weed seeds is not large, this seed would not do for field sowing. It is, however, quite suitable for roadside planting or for sowing in waste places. Special price in lots of 10 pounds or more at a time, 10c per pound.

We also have some of the yellow and white biennial seed mixed. This will do very well for sowing for bees in waste places. Price in lots of 10 pounds or more 12c per pound.  
Dadant & Sons, Hamilton, Ill.

## Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE			
	1	6	12
Untested.....	\$ .75	\$4.00	\$ 7.50
Tested.....	1.00	5.70	10.75
Breeders.....	3.00 to \$10.00 each.		
Virgins.....	3 for \$1.00.		

1 frame nuclei without queen, \$1.50;

3-frame nuclei without queen, \$3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

**The COTTON BELT APIARIES, Box 83, Roxton, Tex.**

## FOREHAND'S QUEENS

**15 LBS. SURPLUS**

**Which Colony Is Yours, Mr. Beekeeper?**

**150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. **WHY NOT?** Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of \$3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. **WHY?** Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

Untested.....	\$ .75	\$ 4.25	\$ 8.00	Tested.....	\$1.50	\$ 8.75	\$17.00
Select untested.....	1.00	4.75	9.00	Select tested.....	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

**W. J. FOREHAND & SONS, Ft. Deposit, Ala.**

## Honey Wanted

If you have any white or amber honey to dispose of, write us sending sample at once. Also state how honey is packed and price you ask for the same.

**DADANT & SONS**  
Hamilton, Illinois



Write for price list and booklet descriptive of our

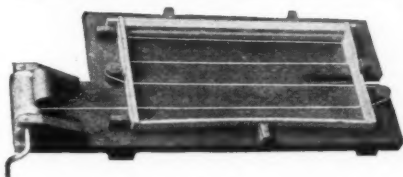
**HIGH GRADE ITALIAN QUEENS**

And Bees by the Pound  
**JAY SMITH**  
1159 DeWolfe St.  
Vincennes, Indiana

## FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

**F. M. ALEXANDER**  
Atlantic, Iowa



PATENTED

**WRIGHT'S FRAME-WIRING DEVICE**

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, \$2.50, postpaid in U. S. A.

**G. W. Wright Company, Azusa, Calif.**

## NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the following list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

Books	Price post- paid alone	With A B J 1 yr
Dr. Miller's "Thousand Answers" (ready March 1).....		\$1.75
Langstroth on the Honey Bee.....	\$1.50	2.00
Doolittle's Scientific Queen Rearing.....	.50	1.25
Bee Primer.....	.15	1.00
Original Langstroth (reprint).....	1.00	1.75
Productive Beekeeping.....	1.50	2.25
Beekeeping (Phillips).....	2.00	2.50
A B C & X Y Z of Bee Culture.....	2.50	3.00
Dr. Miller's "Fifty Years".....	1.00	1.75
Advanced Bee Culture.....	1.00	1.75
How to Keep Bees.....	1.00	1.75

**AMERICAN BEE JOURNAL, Hamilton, Ill.**



"Every Day is Honey Day at Our House"

Give the Children Honey  
**NATURE'S OWN CONFECTION**  
Fresh from Pellett's Apiaries  
**FOR SALE HERE**

Attractive cards like the above for store windows will help sell honey. Size 9x11 inches. Printed in two colors. Price, 5c each; six for 25c, postpaid.

Another card gives cuts showing relative food value of honey and other products. These cards are the same size as the above, and in two colors. Just the thing to place in stores to push sales of honey. Prices 5c each; six for 25c. Postpaid.

**American Bee Journal, Hamilton, Ill.**

## THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

### CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

**CAMPBELL CORRESPONDENCE SCHOOL**

**325 Broadway**

**Billings, Montana**

## HONEY AND BEESWAX

CHICAGO, Jan. 18.—Comb honey is beginning to move a little more freely than for the past 30 days, and it may be that we will clean up yet to a greater extent than was the expectations 60 days ago. Prices are, if anything, weaker.

Best grades of white are bringing 14c per pound with an occasional small lot at 15c per pound. Amber grades are from 12c per pound less. Extracted remains steady at from 10c per pound for the best grades of white with ambers at 7c per pound. Light ambers, good flavor, at 9c per pound. Beeswax is ranging at from 30c to 32c per pound.

**R. A. BURNETT & Co.**

SAN ANTONIO, Jan. 15.—There is little or no honey offered in quantities for shipment from Texas at this time. Nearly all surplus in hands of producers has been marketed. Extracted, according to color and flavor is bringing 8c to 10c in wholesale markets. Beeswax is very firm. We are paying 27c cash and 30c exchange.

**SOUTHWESTERN BEE CO.**

KANSAS CITY, Mo., Jan. 18.—The honey market is slow, about \$2.85 being the top price for fancy white comb honey down to \$2.50 for No. 2. On account of the raise in the local freight rates, the consumption of honey has been curtailed considerably, but we understand that the railroads will adjust these rates after the first of the year and we believe there will then be a better demand for comb honey. Extracted is firm at 7c to 9c a pound, and No. 1 beeswax is selling at 25c a pound.

**C. C. CLEMONS PRODUCE COMPANY.**

CHICAGO Jan. 19.—The honey market is very quiet and we are very much surprised for the reason that it is the cheapest commodity on the market. We have over two carloads of comb honey on hand. We have already sold three carloads up to date, but it looks as though we are going to have a better demand after the first of the year. We are selling 24 section cases for \$2.75 to \$3.00, extra heavy weights glass fronts \$3.25. Extracted honey is in light supply and the demand is very active, selling 10c.

Beeswax ranges from 27c to 32c, according to quality and brightness. We are advertising the honey liberally in the different ways in order to create a bigger demand. Let us all work as best we can.

**D. J. COYNE.**

DENVER, Colo., Jan. 18.—The demand for comb honey in carload lots is improving. We are quoting the following jobbing prices: Comb honey, fancy white, \$2.84; No. 1 white \$2.70; No. 2, \$2.57; per pound of 24 sections. Extracted, white, per pound, 9c to 10c; light amber, 8c to 9c per pound. We are always in the market for beeswax; for clean yellow wax we are paying 30c per pound in cash and 32c in trade, delivered here in Denver.

**THE COLO. HONEY PRODUCERS' ASS'N.**  
**F. Rauchfuss, Mgr.**

## EASTERN BEEKEEPERS

This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars \$5.00 a gross.

**I. J. STRINGHAM**

**105 Park Place, N. Y.**

**APIARIES: Glen Cove, L. I.**

**BEE-SUPPLIES** of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

**J. W. ROUSE, Mexico, Missouri**

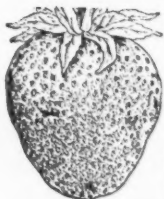
"ROUGH ON RATS" ends RATS, MICE, Bugs, & Don't Die in the House. Unbeatable Exterminator. Ends Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. Economy Sizes 25c, 50c, Small 15c. Used the World Over. Used by U. S. Govt. Rough on Rats Never Fails. Refuse ALL Substitutes.



## 20 Packets Seeds—10c.

We want every reader to test "HARRIS SEEDS THAT HUSTLE." Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double Jap Calendula and Children's Botanical Garden, a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.

HARRIS BROS. SEED CO., 284 Main St., Mt. Pleasant, Mich.



### 4 MONTHS FOR 10c

**Trial Subscription** To Fruit and Garden Paper  
Tells about planting, pruning, spraying and selling fruit and garden truck.

### Ask Us Your Hard Questions.

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

## CASH

paid for butterflies, insects. Some \$1 to \$7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on carefully killing, etc. Send 2c. stamp at once for prospectus.

SINCLAIR, Box 244, D Los Angeles, Cal.



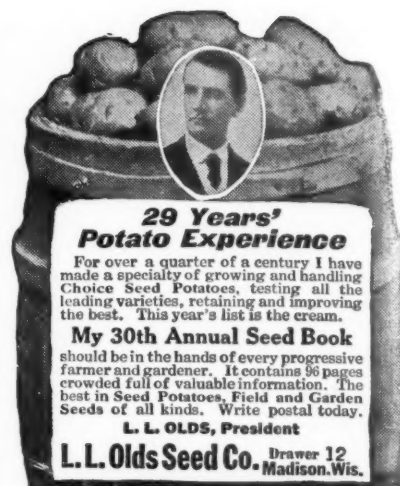
## Paint Without Oil

**Remarkable Discovery that Cuts Down the Cost of Paint Seventy-Five Percent**

**A Free Trial Package is Mailed to Everyone Who Writes**

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.



### 29 Years' Potato Experience

For over a quarter of a century I have made a specialty of growing and handling Choice Seed Potatoes, testing all the leading varieties, retaining and improving the best. This year's list is the cream.

### My 30th Annual Seed Book

should be in the hands of every progressive farmer and gardener. It contains 96 pages crowded full of valuable information. The best in Seed Potatoes, Field and Garden Seeds of all kinds. Write postal today.

L. L. Olds, President

L. L. Olds Seed Co. Drawer 12 Madison, Wis.

## GOOD USED PIANOS AT CLEARING SALE PRICES SOLD

## UNDER WARRANTY AND SHIPPED ON APPROVAL AT

## OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; \$75.  
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; \$85.  
Pease Piano Co., upright, rosewood; \$100.  
Smith & Barnes, upright, mahogany; \$115.  
Mason & Hamlin, upright, ebonized, dull finish; \$125.  
Sheraton upright, mahogany, nearly new; \$135.  
Empire Piano Co., upright, mahogany, superior tone; \$150.  
Fischer upright, golden oak, fine condition; \$175.  
Fischer upright, mahogany, like new; \$200.  
Story & Clark, upright, elaborate style, mahogany; \$225.  
Knabe, upright, mahogany, perfect condition; \$250.  
Behr Bros., upright, mahogany, slightly used; \$275.  
Knabe, upright, mahogany, Colonial style; \$300.  
Steinway, upright, mahogany; \$350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY CHICAGO, ILLINOIS



Who wants to wade through skim milk up to the chin? Then why spend *hours* digging out facts that you can get to in *minutes*? The Farm Journal dumps the skim milk. Gives you nothing but the cream!

No dilly-dallying. No editorial frills or fixin's. Good, live, clean talks. Farm facts by experts. Household helps and practical, money-saving suggestions for Mother. Always enough first-class reading to interest every member of the family. Send \$1 for 5 years' subscription. Money back any time. Or ask for free sample copy and your Poor Richard Almanac for 1917. It's free, too!

## The Farm Journal

201 Washington Square, Philadelphia

## The Double-Walled Massie Bee-Hive

**Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate**

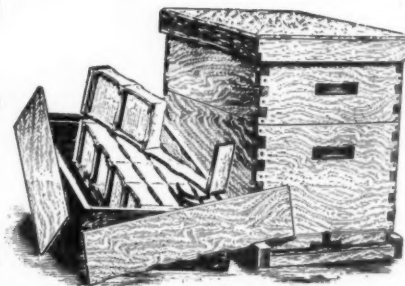
**Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine**  
**VENTILATED BOTTOM**



THE MASSIE HIVE  
For Comb or Extracted Honey

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the Massie is the very best hive, and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

### Why Not Give Us a Trial Order?

We are also extensive manufacturers of Dovetailed Hives and all other Apian Supplies. If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and special price list to any one upon request

KRETCHMER MFG. COMPANY,

110 3d St.

Council Bluffs, Iowa

### Satisfaction Fully Guaranteed



## NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

### Prices of Combless Packages Without Queens\*

Size 1-lb. each.....	\$1.35
" 2-lb. ".....	2.35
" 3 lb. ".....	3.35

### Three-Banded Italian Queens for April, May and June

Untested, each.....	1.00	Tested each.....	1.50
" 6.....	4.50	" 6.....	8.00
" 12.....	8.00	" 12.....	15.00
" 100.....	65.00	" 100.....	100.00
		Select tested, \$2.00; breeders, \$3.00	

\* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States, and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

**MARCHANT BROS., Union Springs, Ala.**

## PURE MATING GUARANTEED—QUALITY FIRST

I am better equipped to take care of all orders, both LARGE AND SMALL, having located my queen and package business in Georgia. Our mail and express service is excellent, having 24 out-going trains DAILY—will make delivery same day order received.

Will be glad to hear from parties wanting LARGE QUANTITIES, as I am prepared to handle any size orders—will be glad to furnish sample of my combless package—will guarantee safe arrival in United States and Canada. Get my prices on 100-pound lots, and over my price will make you order from me.

### Prices on Queens for March 15th to May 1st delivery.

	1	6	12
Untested.....	\$1.50	\$7.50	\$12.00
Tested.....	2.00	10.50	18.00
Select Tested.....	3.00	15.00	24.00
Breeders, \$5.00 and \$10.00			

### Prices for bees by the pound without Queen begin April 15th.

	1	6	12
1-pound.....	\$1.50	\$8.00	\$15.00
2-pound.....	2.50	14.00	27.00
3 pound.....	3.25	18.50	35.00

### Prices of nuclei without Queens begin shipping April 15th.

	1	6	12
1-frame.....	\$2.00	\$10.50	\$18.00
2-frame.....	2.50	12.00	22.00
3 frame.....	3.50	20.00	37.00
5 frame.....	5.00	23.00	44.00

**J. E. MARCHANT BEE & HONEY COMPANY. Columbus, Georgia**



### TYPEWRITER SENSATION

**\$2<sup>50</sup> A Month Buys L. C. Smith**  
a Visible Writing

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free. H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

### CIRCULAR SAW MANDRELS AND EMERY WHEEL STANDS

Mandrels with boxes and pulley complete for bolting our frame. Three sizes. Circulars.

CHAS. A. HENRY, Eden, N. Y.

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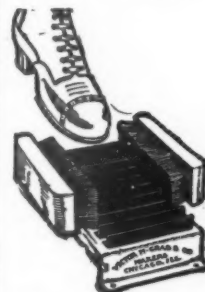
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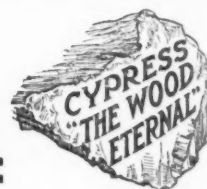
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